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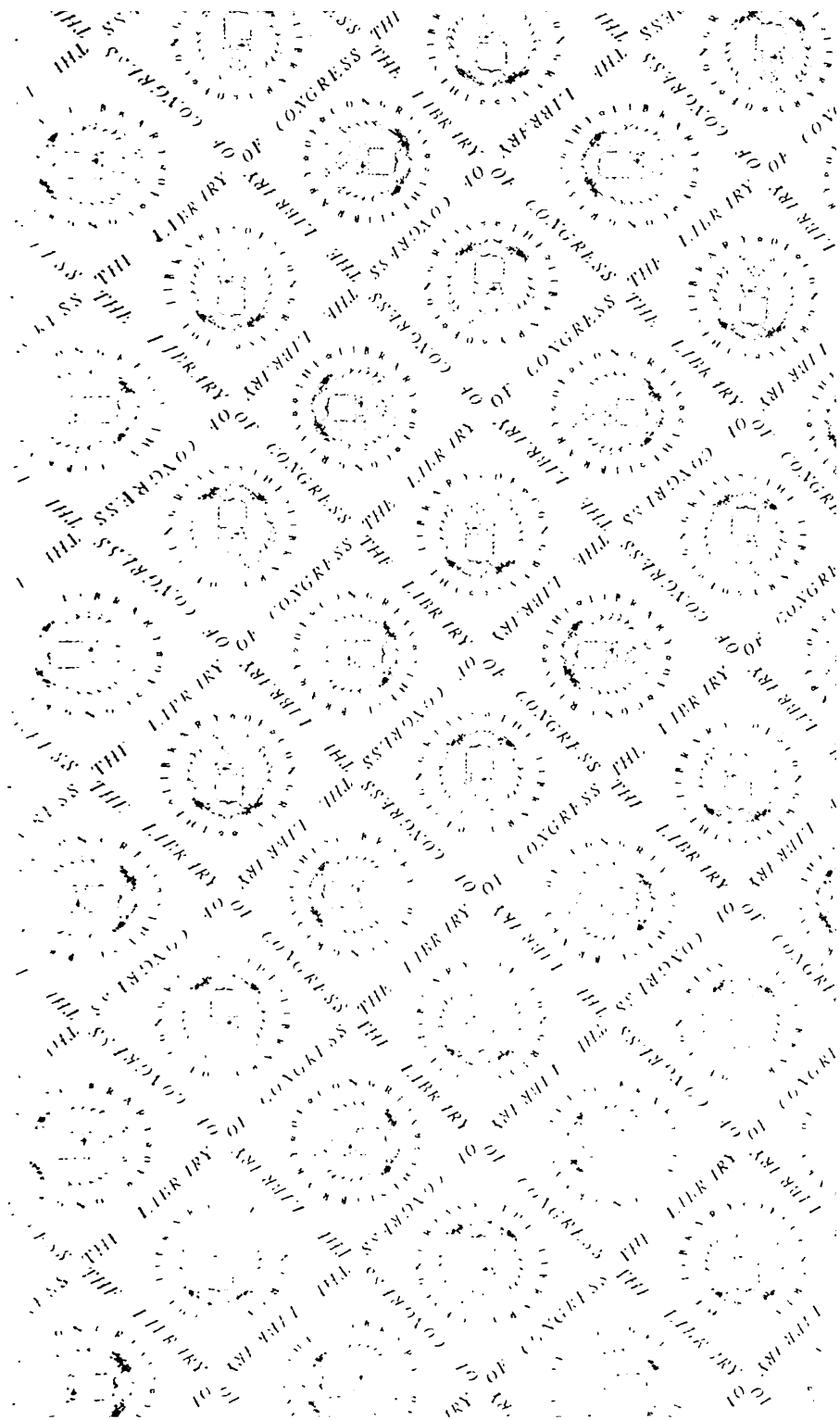
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JOURNAL
OF THE
BATH AND WEST AND SOUTHERN
COUNTIES SOCIETY.

FOURTH SERIES.

V O L . X I I I .

1902-1903.

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**WORK AND LEARN.**  
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LONDON :

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[' He that goes about to forward agricultural improvement must begin by finding out the true reasons of what is called routine, or the 'custom of the country.' It sometimes happens that these reasons are only accidental, and then you may dismiss them fearlessly ; but often it turns out that every-day practice rests on a solid foundation of facts ; and then if you make an onslaught on local prejudices, they will be sure to beat you.

" The true course for the agricultural improver is, to take one step at a time, to gain a clear insight into facts by experience, not to try to go too fast, and to trust to the work of time

" I practice which sets up to do without theory is contemptible, theory without practice is foolhardy and perfectly useless."—*From the Rural Economy of England, Scotland and Ireland*, by LEONCE DE LAVERGNE.

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JOURNAL
OF THE
BATH AND WEST AND SOUTHERN COUNTIES
SOCIETY.

Original Articles and Reports.

I.—*Tenant Farmers as Breeders of Pedigree Stock.*
By A. T. MATTHEWS.

AGRICULTURE THIRTY YEARS AGO.

THE tenant farmers of Great Britain, or, at any rate, the larger occupiers, have for some years past been a class threatened with extinction, and yet thirty years ago they were called the backbone of the country and presumably held a most enviable position. A long lease of even a moderately good farm or a yearly tenancy under a good landlord was at that time a very tangible asset, and was considered almost a small fortune in itself. So long as he paid his rent punctually and farmed well the farmer was quite secure in possession, while there was always sufficient competition at a market price for his produce. The surroundings of his life were pleasant and healthy; labourers treated him with, at least, outward respect, and tradesmen sought his custom with deference, while, if he happened to require a little temporary accommodation, his credit was so good that his banker would advance it and ask no questions.

These advantages surely constituted a happy lot for any reasonable man, and at the time I have referred to there were but few clouds upon the farmer's horizon. The labourers had not yet risen in revolt, and the great fall in the price of grain was a thing undreamt of. A very few years, however, had to run their course before all this was changed, and the sun of British agricultural prosperity seemed likely to set for ever, and that without warning. Had a prophet arisen to foretell

the state of agriculture during the last twenty years of the nineteenth century, he would have been laughed to scorn by men who had seen that the repeal of the corn laws had failed to materially injure them, and who might be pardoned for believing that, after having survived such an event, they had nothing else to fear.

This feeling of security had long taken possession of our farmers and had bred in them a confidence in their methods, and in those of their fathers before them, which it would have taken an earthquake to shake, and it cannot be denied that they had a good show of reason for such a state of self-satisfaction. For centuries previously British agriculture had been acknowledged to be the best that the world could show, and its live stock was the envy of all lands. No wonder, then, that the long stretch of prosperity between the forties and the eighties should have produced a thick-skinned conservatism with respect to ancient methods, which it would take many lean years of adversity to penetrate.

The great depression found the land of this country mostly in the hands of those who, though keen business men in their way, were obstinately wedded to their own systems of farming, both as to the choice and rotation of crops and the management of their stock. For years they went on growing wheat just the same when the price was 28s. per quarter as they did when it was 56s., and breeding just the same number and class of cattle, sheep, and horses, fully persuaded that the good old easy times would come back again, and that there was no occasion to adopt new-fangled ways.

CLASSIFICATION OF FARMERS.

Tenant farmers can be grouped under several heads. Those with pure-bred flocks and herds have always held a distinctive position. Next come the first-rate ordinary farmers who endeavour to have everything good and even well-bred, but stop short at recording pedigrees. Then we have a very large class who never trouble themselves much about quality, and, having no system of breeding, leave everything to chance. These latter have always been inclined to sneer at the "pedigree men," a favourite saying with them being that a sheep or beast should "carry his pedigree on his back," meaning, I suppose, that they should be good, thrifty animals. No doubt in this they speak the truth unwittingly, for a pure-bred animal ought to be worthy of its pedigree; but what they wish to convey is that there is no intrinsic value in pedigree.

This is not the class of farmer to bear up against low prices

and adverse circumstances. Carelessness in one department of a business means, generally, carelessness in all, and, as a rule, such happy-go-lucky farmers have been the first to collapse. Therefore, in considering the question before us, we may leave them out of the discussion altogether and confine our attention to the study of the methods of those who have shown a good lead in the past and who have demonstrated the truth of the old proverb that "the best is the cheapest."

VALUE OF PEDIGREE.

With comparatively few exceptions, to which I will later on refer, the bulk of the farmers in the days of prosperity were singularly ignorant or careless of the value of pedigree, and even those who were forced to recognise it when they saw some enterprising neighbour keeping his head above water by means of his pure-bred stock, found it out too late.

One of the strongest arguments in support of the contention of this article—viz., that British farmers should keep pedigree stock—is to be found in the fact that few farmers have withstood the bad times so well as those who have had well-established pedigree herds and flocks. It has been a very rare thing for one of these to succumb.

It will, I think, be easy to prove that pedigree has triumphed, to the benefit of the breeders themselves and the country at large. But I wish to go further, and show that a large proportion of the best occupiers would do well to imitate them to the utmost extent of their opportunities; that there is plenty of room for extended effort in this direction; and that written records are necessary to ensure permanent success to British breeders.

PAST INFLUENCES.

Although I am writing in the interest of tenant farmers, I would like to pay a passing tribute to the long and honourable roll of country gentlemen and capitalists who for more than a century past have done so much, often at considerable expense to themselves, to improve the live stock of this country. Indeed, had it not been for their efforts, it is difficult to imagine what would have been the present condition of the breeds of horses, cattle, sheep, and pigs, not only of England, but of the whole world. Not, of course, that those efforts have been altogether disinterested. Some hoped for profit, and a few obtained it, but I believe the majority kept pure-bred stock for the intrinsic pleasure they found in the pursuit, which, whether regarded as an agreeable pastime or a scientific study, is an extremely

fascinating one. Whatever the motive, however, it is certain that we have to thank members of the leisured and wealthier class, followed by an enterprising tenant here and there, for the great advance which has been made. They fostered the art for many years, when it would have been quite impossible for men working for their living to have done so, even if they had ever thought of it. They built up pedigrees, established records, and exhibited their stock at distant Shows when the expense of doing this far exceeded the value of any prizes they might win, and so began, though perhaps unconsciously, to educate the public mind.

The Agricultural Shows have been indeed an important factor in the progress made. They formed a battle-ground for rival breeders, stimulating them to a healthy emulation, whilst at the same time they provided a meeting place for comparing notes, for the selection and exchange of sires, and for the learning of many a practical lesson.

With regard to the show system generally, I am well aware of the severe criticisms to which it has been subjected, particularly for its encouragement of over-feeding, and few will be found to deny the justice of much that has been said on this point. But at the same time, I am convinced, viewing the subject as a whole, that this drawback has been far outweighed by the immense influence for good which must be placed to the credit of the Shows. They have always been a popular resort for farmers and their families, and who will attempt to place a limit to the effect of the object lessons at the ring side or say how many fine herds and flocks have owed existence to their inspiration?

"PURE BRED" AND "PEDIGREE" STOCK.

Before going further it may be well to clear the position by distinguishing between "pure bred" and "pedigree" stock, for there are large numbers of flocks and herds which are undoubtedly one without being the other. Many distinct breeds of farming stock have been maintained free from alien crosses for generations, but until quite recent years no written records have been kept of their descent, and therefore, though "pure bred as Eclipse," they have no claim to "pedigree." On the other hand, there are plenty of animals entered in herd and flock books having just the regulation number of generations, or "crosses," as they are called, to entitle them to admission, but whose real purity of breeding would hardly bear critical inspection. Let us suppose the following example. Starting with a Hereford cow, a farmer crosses with a duly-registered

Shorthorn bull, her female progeny with another, and so on till a pedigree of five generations is built up, rendering the descendant, with properly-attested credentials, eligible for the Shorthorn Herd Book. Practically, no doubt, this animal is a Shorthorn, and I have no single word to say against the system, which is probably the best that could be devised; but still, when we come to talk of purity of breeding, all who have observed the wonderful way in which the characteristics of far-off ancestors are reproduced, will admit some slight deficiency in this system. However, there is the pedigree entered in the book, and the animal carries an additional value in consequence.

Of the truth of this last statement there is no doubt, for the pedigree brings the animal within range of another and better class of buyers. As butchers' meat it is worth at least as much per pound as a common beast, while as a breeder it is far more valuable. It is eligible for any show catalogue, and, if good enough in itself, it appeals to the foreign buyer, who would not look at it, however handsome it might be, were it not eligible for registration.

ADVANTAGES POSSESSED BY BRITISH BREEDERS.

As the object of this article is to encourage the tenant farmer to become a breeder of pedigree stock, let us, as the first step, briefly consider what natural advantages he possesses for the purpose.

To begin with, perhaps the greatest advantage of all is that his tent is pitched in this tight little island. The patriot may boast of its political greatness, but its supremacy may be called in question by the denizen of other lands. The poet may sing of its natural beauties with perfect truth, and yet for grandeur of scenery and profuse vegetation it may have successful rivals; but as a suitable home for domesticated animals there is nothing in all the world to compare with it. Nature would seem to have so planned its soil and climate as to make it—using the word in its widest sense—a perfect home for cattle. Where else shall we find all the year round such brilliantly green pastures, or such vast areas of arable land so well adapted for sheep in winter? Its climate is unique and precisely what is required for the production of the most perfect form of animal life, combining the finest quality with robust and hardy constitution. Its insular position is also a distinct advantage, for, by the adoption of wise laws, it is able practically to keep out those infectious diseases with which many other countries are chronically afflicted.

It is generally admitted that we are largely indebted to our climate for the peculiar quality inherent in the Anglo-Saxon race which enables it to thrive under any skies and to feel at home in almost every zone habitable by man. This remarkable national characteristic extends to the lower creation, and wheresoever British animals are taken, there they will prosper and leave unmistakable marks of improvement by crosses with the native breeds. From every quarter of the globe come buyers of British live stock, and with every year the demand for such stock increases, while the areas of agricultural production are ever-widening to keep pace with the spread of civilisation and the constant growth of population over the world's surface.

For many, many years to come I see no limit to this gigantic market, which may be regarded as the one gleam of light in the otherwise gloomy outlook for the owners and occupiers of land in this country.

Objection may possibly be taken to this view on the ground that the herds and flocks, established by the purchase of the very cream of our stock, will soon be able to supply all the requirements of the foreign and colonial buyers, who will no longer find it necessary to export animals from England, carrying them across wide oceans and continents at great expense both for prime cost and freights. But here we find another advantage not often recognised, but which, from our point of view, is a great one indeed. Notwithstanding that our stock will live and thrive in any reasonable climate, it does not follow, even if pure breeding be maintained, that their offspring will retain their original character when exposed to entirely new surroundings. The reverse is well known to be the case, except in a very few favoured localities where the climate resembles our own. It is found, indeed, that the very best British strains begin to deteriorate in a comparatively short time, or at least show signs of reverting to the style and character of the aboriginal stock of the country.

After all, this tendency to relapse into a type natural to the country is just what we might expect and seems to be a law of Nature. See what happens in the case of Jersey cattle brought to England. Every breeder of Jerseys knows how difficult, if not impossible, it is to preserve what is called the "Island type" without constantly going back to the starting-point for sires bred in the island. The difference in climate between England and Jersey is comparatively small, and yet it is sufficient to alter very materially the character of the cattle if they are bred in England for two or three generations. Such being the case, we may be prepared for a much greater

change in the descendants of animals taken, let us say, to Texas, or the dry, arid regions of Australia.

This tendency to reproduce the idiosyncrasies of native races is, I believe, a well understood fact, and if it applies to most of the countries which import British pedigree stock, such of our breeders as know how to use it have in it a trump-card placed in their hands which may give them a winning game.

NEW *versus* OLD METHODS.

With communities as with individuals there is no such thing as standing still; there is always either forward or retro-grade movement. I notice with much regret that the latter is just now the case with stock-breeding as a whole in this country, for, in spite of good prices, the agricultural returns show a serious decrease in the total number of cattle and sheep. This is a most alarming fact, and one of the saddest proofs that the farmer's capital has indeed diminished. This ominous decrease of stock has not been caused by the land being used for other purposes, pasturage having increased, so there is no comfort to be gained in that direction.

We cannot, therefore, avoid the conclusion that ordinary, old-fashioned farming will no longer pay in this country, and that, unless some great change of method is generally adopted, matters must go from bad to worse. Under the old conditions of management, it seems plain enough that even a temporary recovery of prosperity is only possible in the contingency of a great war with naval Powers, to be followed by an aggravation of the present state of things in the succeeding peace. The artificial raising of prices by protection is only a baseless dream, and nothing remains to be done but to face the situation as it stands and make the best of it, in the manly old British spirit of self-reliance.

To be able to look forward and gauge the probabilities of the future is the secret of commercial success. This is a truism which applies with equal force to farming, although very few farmers ever think of what is likely to happen in the coming years beyond the ordinary rotation of crops. There have, however, been a few notable exceptions, and these, in time of stress and trouble, are reaping their reward.

Much might be done by combination, were that possible, but those who have spent years of labour in that direction may well despair of the British farmer ever being saved by that means. Doubtless, there are other hopeful avenues for new developments besides that which I now advocate. Amongst these, where the land is suitable for the purpose, is the enlarge-

ment of the fruit industry, but taking the country as a whole, by far the most promising field for improvement and revival will be found in our live stock.

I have pointed out that breeders in Britain are possessed of enormous natural advantages, and that they have also what is almost an equivalent to a monopoly of the foreign and colonial demand for pure-bred stock. Let us now glance at the home trade, see what it is, and consider what it is likely to become if the wonderful prosperity of trade continues as at present. Wealth and population are growing apace, luxury is increasing with all classes alike, and everybody wants to be supplied with the very best. Meat is an important item in every household, and those who hope to get it cheaply will hope in vain or have to be content with foreign produce, for I see no prospect whatever of the supply of meat exceeding the demand, though, indeed, the day may come when consumers will cease to be willing to pay as much for the imported and refrigerated article as for the best home produce. A walk through some of the London suburbs should be sufficient to disabuse the mind of any thinking person of the idea that there is any probability of a shrinkage in the demand for good things. He would see on every hand whole streets of houses springing up—houses, too, which will let easily at 80*l.* per annum, and evidently intended for a class who dine well every day.

I am not, of course, implying that a demand for good quality means that it must be supplied from pedigree or pure-bred flocks and herds. They are, however, the fountain head of good quality, and all breeders must go to them constantly if they wish for improvement, or even the maintenance of a fair standard of excellence.

Many farmers are in favour of a first cross between two distinct breeds, well knowing that animals so obtained are usually profitable, possessing as they do vigour of constitution and aptitude to fatten. Take the cross between the Hampshire Down and Cotswold or Lincoln sheep. The produce is half-bred and makes grand sheep for the butcher. This is well known, but how can they be obtained without the two pure breeds? If they are kept for breeding their produce are hopeless mongrels, unless, indeed, a skilful breeder takes them in hand, and by patient selection evolves a new and distinct type like the Oxford Down, which was obtained in this way.

The same argument holds good with cattle as with sheep. A half-bred Shorthorn and Jersey cow is a most useful animal, first rate for the dairy and fairly good for beef, but her produce is a mongrel of uncertain quality.

In order to have first crosses then, the distinct breeds must

be maintained, and the only certain way of preserving a breed in purity is by registration. Almost every distinct variety of horses, cattle, sheep, and pigs, have now established registers, which fact is a proof in itself, if proof were required, that records are necessary or at least desirable, for they have been founded at the instigation or with the consent of most of the leading breeders.

SHORTHORN-BREEDING.

I now propose to touch briefly on what has been done by a few representative tenant farmers in pedigree breeding, taking the Shorthorns as an example, they being the largest in numbers, and most widely spread, the oldest in registration and, perhaps, the most interesting on account of their general usefulness and adaptability.

Thirty years ago I was myself a young tenant farmer and laying the foundations of a herd of pedigree Shorthorns, and so the position of matters at that time with regard to the breed is vividly fixed in my memory. The boom in fancy lines of blood of the Bates, Booth, and Knightley groups was at its height. Gentlemen would often send a commission to purchase a certain animal without regard to its personal merit, and cheerfully pay thousands of pounds for it, while others, equally sound in breeding and, possibly, far better animals were going for very moderate sums—say from 40 to 50 guineas—merely because they were not in the charmed circle of “fashion.” This extraordinary mania was puzzling to a beginner and fraught with danger to the welfare of the breed. Many sober-minded men lost their heads, and, tempted by golden visions, threw in their lot with the line breeders, some of them to their ultimate sorrow. Two tenant farmers of my acquaintance actually gave between them 650 guineas for a “Duke” bull, so bitten were they by the prevailing craze. These men had good practical herds of pedigree cattle, and the greater part of one of these herds was composed of animals with a long line of descent from Mason blood, tracing back to the early times of Shorthorn history as far as the “Duchesses” themselves. That these cattle possessed intrinsic merit is proved by the fact that they were very successful in the Show-yard, and often beat representatives of the fashionable tribes then worth, perhaps, ten times their own market value.

This solitary instance will be sufficient to exemplify the state of the Shorthorn world of that period. Happily, there was a good number of breeders who never bowed the knee to this Baal of line breeding, and so escaped being involved in the great collapse brought about by the agricultural panic which marked

the close of the century. When the bubble burst many paid dearly for their infatuation, but—for the Shorthorn as a breed—that which looked like a calamity was really a blessing in disguise, clearing the ground, as it did, for a return to sound principles of breeding and giving practical men a chance to see what they could do.

As if to help forward this healthier state of things there sprang up a brisk foreign demand—notably from the South American Republics—for good animals. Hitherto, there had been a strong tendency on the part of Australian and American buyers to follow the English lead, and extravagant prices were given for line-bred animals wherewith to establish herds abroad which would rival those of the old country. But these new men had totally different ideas. They wanted size, substance, good hair, constitution, and symmetry, while, as for pedigree, all they asked for was that their purchases should be eligible for entry in the herd book. This last qualification, however, was inflexibly demanded, although the length and quality of the pedigree was quite a secondary consideration.*

The effect of this demand was to put new life into the home trade for really good Shorthorns with any pedigree, as long as it was sufficient to insure registration. The auction sales denoted a return of confidence, and owners of stock answering to the above description felt themselves in the possession of a sheet-anchor with which to outride the bad weather threatening agriculture with shipwreck.

These happy survivors, of what I may term the Shorthorn crisis, were largely tenant farmers who had founded and built up their herds in various ways. One Oxfordshire man, many years ago, bought three cows of the same tribe with a long pedigree. They came of a prolific family, and, favoured by good luck and management, their progeny grew in numbers till, this year, without the purchase of a single additional female, a herd large enough for a first-class auction sale had accumulated, and has just been sold at a capital average. This herd, deprived of its records and sold as common stock, would probably have realised only about one-third of what was actually obtained. It must be noted that these cattle had been reared in the ordinary way at no extra cost, for even the purchase of sires was more than met by the sale of yearling bulls. Practically, therefore, all the money received from the sale beyond the

* The United States and Canadian Herd Books, however, have now made a rule requiring that animals imported from England shall trace, in all their crosses, to animals entered in, or eligible for, Volume XX. of the English Herd Book, and in South America they stipulate that pedigrees shall trace back to 1850.

market value of common stock was clear profit, derived from pedigree alone. In fact, this farmer's little venture repaid him, at least, 1000*l.*—the well and pleasantly-earned reward of enterprise and patience.

My next case is equally striking, though the success was obtained on a different system. When quite a young man, a farmer started in business in the Thames valley. His father, who had a large herd of Shorthorns which combined high breeding with excellent milking capacity, did not exhibit, and it was always his boast that the keep of his Shorthorns cost no more than that of common stock. For many years he sent milk to London, rearing his calves on a meal of his own manufacture, instead of costly new milk, which was required for his contracts. Educated in such a prudent school, the son followed in his father's footsteps. He also would have a herd of pedigree Shorthorns, but not seeing his way to purchase high-priced females, he went to work in a different way. Having a useful lot of ordinary dairy cows of Shorthorn type he used pedigree sires, keeping a careful register of all births. Year after year this went quietly on; patiently the pedigrees were built up, till now he comes before the world with a grand herd of about 400 head of cattle, all good to look at and a large proportion already qualified for registration. His herd to-day is worth a hundred per cent. more than it would have been if he had been contented with the careless, jog-trot procedure of most farmers. This very remarkable instance of what can be done by a tenant without investment of extra capital is well worth the study of farmers generally, and even if it stood alone would be sufficient to prove my case.

A very sensible letter recently appeared in the 'Live Stock Journal' on the question—"Why do farmers object to pedigree stock?" The writer stated that farmers will not buy a female pedigree Shorthorn, although it may be going at a sale cheaper even than they could buy common stock at market—an event by no means uncommon. The reason he gives for this singular fact is that farmers are afraid of pedigree, because it denotes bad milking qualities, and he admits that the indictment is true. Shorthorns, he says, have been bred for flesh only, to meet the foreign demand for beef-producing animals. I believe there is a great deal of truth in this indictment, although, strange to say, farmers are willing to use a pedigree sire, apparently under the delusion that milking propensity is inherited only in the female line.

The glory of the Shorthorn breed has always been that no other possesses in an equal degree such general utility; and in spite of the injury which in Show herds has been done to

many of them as milkers, they may still lay claim to that proud position. Farmers have naturally taken their impressions from what they have seen in the Show-yard, and it is no wonder if the condition in which animals generally appear there has misled them. Except in the milking classes, milk has weighed very little with the Judges for many years, and the exhibitors have bred and fed for beef only. As, however, with line breeders so with exhibitors, the tactics pursued have fortunately always found their limit, and there are plenty of Shorthorn herds in this country to-day, where the cow still flourishes as a splendid dairy animal, as well as a grand butcher's beast when her work at the pail is over. In fact, this breed is very safe material for any farmer to work with, and a young farmer could hardly do better at the present time than go in for a first-class herd of dairy Shorthorns with pedigree, for which, he may rest assured, there will always be a brisk demand.

It will take him some years to attain to the front rank; but with correct breeding, feeding, and weeding, the thing can be done, and while he is waiting for a reputation his herd will be paying their way in the dairy.

In this connection there is one detail of management to which I must refer, viz., the regular weighing and recording of each cow's yield. This, I know, is an onerous and troublesome addition to the daily work; but for anyone engaged in the business of breeding for milk, it is essential to success. Comparatively few undertake it at present, but without it the process of selection becomes mere guess-work, for if one cow milks heavily for a few weeks and then falls off, her real annual total may be less than that of a persistent moderate milker.

Whole books have been written about Shorthorns; and it speaks well for the stamina and real sterling value of the breed that the fierce rivalries between the various groups of fanciers have not resulted in its ruin, or, at any rate, created such a divergence of type as to destroy its unity. Such dangers, however, are now things of the past; and since the introduction of the robust Scotch blood from the herds of Messrs. Cruickshank and others into many line-bred herds, fictitious values have gone by the board, and the production of a fine useful animal is the principal object.

THE JERSEY BREED.

It is rather a far cry from the massive Shorthorn to the elegant little Jersey—from the breed so well adapted for general purposes to that which most farmers look upon as only fit to adorn a gentleman's park or a suburban paddock. For such a

purpose these beautiful animals are indeed eminently fitted. But they have much to learn who imagine that Jerseys are ornamental only, because, provided that they are good specimens of the breed, there are no more profitable cattle. Their profit, however, must be made in the dairy, for they are very poor producers of beef, and this prevents them from being regarded as farmers' cattle, or being generally taken up as payers of rent. I will, however, venture to say, that those who do go in for them and know how to select, breed, and manage them, will be very slow to give them up. There are many farms within easy reach of large towns where a Jersey herd would pay better than any other form of stock-keeping. As producers of butter and cream of the choicest quality they are quite unrivalled, while, as to quantity, if only the best milkers are kept, it is astonishing what they will yield in the year, milking, as they do, at least ten months out of the twelve.

The following example is quite enough to show how erroneous is the assertion that the Jersey is only a "fancy" cow. A gentleman had a cold clay farm on the Sussex Weald, all grass, which had been let for about 20*l.* per annum for the 120 acres, —merely a nominal rent. He decided to try dairying with Jersey cows, and did so with marked success. Keeping a careful register of each cow's performances, and rigorously weeding out those whose yield was unsatisfactory, by judicious breeding and selection he attained to an average of 400 lbs. of butter each per annum over his whole herd of thirty cows. The butter was sold at sixteen pence per pound in Eastbourne, and, with the value of the separated milk, brought him an average of 30*l.* per cow. This very remunerative return was not obtained by extravagant feeding, for he never gave more than four pounds of cake per day in winter, and nothing but grass in summer.

A city man, who has a small farm in Middlesex, keeps about fifty Jerseys of all ages, milking about eighteen. He sells all his cream at about 2*s.* 6*d.* per quart, and says his farming is a capital investment.

Both these herds are registered, and neither owner has any difficulty in selling off any surplus stock. It is a rare thing to find a Jersey herd without a registered pedigree, which is regarded as a necessity.

REGISTRATION.

The Shorthorn Herd book has been in existence eighty years, having been started in 1822, and it was not till 1846 that any other breed followed suit. Then the Hereford breeders began to register, and gradually all the other breeds have done so. It was long held by owners of cattle of fixed uniform colour and

type that registers were unnecessary. They said that a pure Hereford or Devon could always be recognised at sight, and what was the use of a printed pedigree? As the years went on, however, and the reports of the long prices realised for pedigree Shorthorns were read, these men began to alter their opinion. Soon the foreign buyer settled the question by demanding registration as proof of pure breeding, and then every prominent breed of cattle and sheep established a herd book. The breeders found it useless to struggle against the tendency of the times and the march of events, and so—some of them unwillingly—fell into line with the rest.

It was not, however, till 1883 that the first flock book was published in England when the Shropshire men led the way. Four years later the Suffolk register followed, then the Oxford Down in 1889, the Hampshire in 1890, and the Lincoln, the Leicester, the Southdown, the Cheviot and the Dorset Horn in 1892.

But although flock books in this country are things of yesterday there have long been pure breeds of sheep confined, for the most part, each to its own native district. There is no cosmopolitan breed of sheep, and all the varieties thrive best in their original localities. Some will not bear removal, but begin to lose their distinctive character at once on being taken from their natural home. Others are less particular, especially such breeds as the Shropshire and Oxford Down.

Pure-bred flocks have been more common with farmers than pure-bred herds. Breeds like the Cotswold and South Down have been handed down from father to son for generations, and any suggestion of crossing or changing them in any way would have been indignantly rejected. The two last mentioned breeds are amongst the oldest in the country, and it is easy to understand that their owners would not be at all anxious to register them, they being so easily recognisable and of such a fixed and well-known type. It was quite otherwise with the Shropshires and Oxfords. They had been built up with half a century's care and patience by a few enterprising men, who had at last succeeded in getting them recognised by the Royal and other Agricultural Societies as distinct breeds. It was not likely they would see with equanimity such proceedings as sometimes took place. Farmers would enter first cross sheep, or at any rate, very irregularly bred ones, say, as Oxford Downs, and their superior size would sometimes snatch a premium or two. There is no doubt a register in such cases became an urgent necessity for the protection of the breed, just as it was with the Shorthorns, whose great variety of colour and character compelled their owners to record their breeding.

The breeders of these comparatively new varieties had no choice if they wished to stand in the front rank, but the South Down men have not stood so well together. A few well known flocks are still unregistered, their owners standing proudly aside and relying on their personal reputation as being all sufficient. They may continue to do this for a time with impunity, but they will probably find the force of circumstances too strong for them in the end.

The chief objections to sheep records usually advanced have been, first, the difficulty of identification, and, second, the great temptation to ascribe paternity to celebrated rams without any right to do so. The first objection has been almost entirely removed by the adoption of suitable ear labels, while, as to the second, if once we begin to throw discredit on any pursuit or system because it presents facilities for dishonesty, we shall hardly know where to stop. Such facilities abound in every trade, and are not peculiar to sheep breeding, whilst the man who could be guilty of such practices would be confiding his reputation to the hands of his shepherd.

With regard to pigs, perhaps, both these objections might be more plausibly urged. Certainly the difficulty of identity would be greater, especially in large herds. The present demand for small lean bacon threatens the extinction of the coarser breeds, and offers a field to adventurous breeders for the establishment of a new and improved type.

ADULTERATION OF CLOTH.

Sheep breeding in this country, especially with the long-woolled varieties such as the Cotswold, Lincoln, Romney Marsh, Devon, &c., would receive a great fillip if something could be done to check the present system of gigantic misrepresentation practiced by cloth manufacturers. A paper was read by Mr. Mansell, before the International Conference of sheep breeders at Carlisle during the week of the Royal Agricultural Society's Show there, demonstrating that much cloth is now made with only a small proportion of wool, or even with none at all, and yet sold as "woollen" material, cotton or shoddy being substituted for wool. This unfair trading (to call it by the mildest name) is exactly on a par with selling margarine as butter, but it appears that the Adulteration Acts do not apply to clothing, and so the producer of wool and the wearer of garments alike suffer.

The remedy proposed was that the various Governments should make laws compelling the plain marking of all materials, so as to show the ingredients of their composition. This sug-

gestion seems reasonable and just, and should meet with the support of all sheep breeders as well as that of the general public.

SHEEP-SCAB.

Another matter which more directly affects the owners of registered flocks, viz., the stamping out of the scab disease, was also discussed at the same Conference. This loathsome complaint is naturally greatly dreaded in our Colonies and in foreign countries, and there is a very general belief that the pest is much more rife in England than is really the case. It was stated at the Conference as a positive fact, that all the registered flocks in this country are entirely free, and that, except in Wales, there are only a few cases amongst ordinary flocks. But this is not enough for our over-sea buyers, and before they will purchase freely they want to know that we can present a perfectly clean bill of health. This, it was urged by the British and Colonial speakers at Carlisle, could easily be obtained by the simple process of compulsory dipping. Some County authorities, it appears, have already adopted this course; but partial measures are comparatively useless, and it remains for the Board of Agriculture to take the matter up and to thoroughly stamp out a preventible disease which so seriously hampers the export trade of our breeders, and the existence of which is a national disgrace.

FARMER'S HORSES.

Every farmer who takes any pride in his business likes to have a good team of horses. There are instances, indeed, where, in other respects, the management of the farm is anything but what it should be, and yet the cart-horses are good, handsome, and well fed. They are the one thing in which the owner does his best, simply because he has a taste that way and makes a hobby of it. On the other hand, I have seen farms where the team is the only thing neglected. This is a great mistake, and, I fear, a very common one. In such cases the horse has been looked upon as a slave and nothing else. No foals are bred, nor even yearlings purchased, and this scratching type of farmer will go on for years allowing his team to get old and prematurely worn out from overwork and under feeding. Then when accident or disease makes a gap it has to be filled up as cheaply as possible. These are the ways of some men, who in other matters are good farmers. It is not that they would not appreciate a fine team, but they take this line deliberately, arguing that the work should cost as little as possible and that horses are only an expensive necessity. There is another class

which does better. Either a good foal or two is bred every year or yearlings are purchased, which are broken in at two years old, keeping the team young, but without any hope of profit. Then there are those who pay every possible attention to their horses, treat them with skill, and bring not only enthusiasm, but a sort of intuitive knowledge of horse-flesh which seems innate with some men born to the work. These get their work done for nothing, and actually make their horses a source of profit by selling powerful young animals to brewers and London tradesmen at long prices. But why do not a larger number of these clever fellows go a step further and breed Shires, Clydesdales, or Suffolks with authenticated pedigrees? There is really nothing to prevent them from doing so, and I am glad to know that a large number of farmers are moving in this direction. Of course there must be some outlay, but most of such farmers as I have last described might easily procure one or two pedigree mares, make a beginning, and with ordinary luck might, in the course of a few years, possess a large addition to their assets. Pedigree horses eat no more than common drudges; they certainly do as much work, and the breeding-mares earn their own living six months out of the twelve. The breeding of thoroughbreds is attended with too much risk for farmers, but I knew one lucky man who bought a racing mare at a low price and sold her colt at a thousand guineas. Hunters and hacks offer another fine field for enterprise and capital, but cart-horse breeding is a safe game for any intelligent farmer to play.

STOCK-BREEDING A SCIENCE.

To attain to the very first rank and to make a great name as a breeder of any kind of stock is only for the very few. Those who give the subject a little thought will admit that the pursuit is, in a certain sense, nothing less than an abstruse science, and to enable a man to make a permanent mark on any breed he should have a liberal education of a special kind. He must, above all, be endowed with the spirit of observation and be prepared to devote his life to working out the problems which present themselves to him. But Collings and Bake-wells are not the product of every generation, much less are they to be found plentifully scattered amongst tenant farmers. New and improved varieties are the work of genius, backed by patient waiting and dogged perseverance in the face of failure and disappointment. What subject can be more obscure than that of heredity? Galton has given us his theory, physiologists have dealt with it and dived deep into its mysteries, but the

seeker after knowledge in this dark region is always meeting with the unexpected, and the most that has been obtained is broad and elastic conjecture of what is likely to happen.

What in common parlance is called "tracing back"—that is the reappearance of features in an animal which were invisible in its parents or grandparents—is certainly to be looked for over and over again for several generations, often puzzling the breeder who is endeavouring to fix a new type.

WHY FARMERS HESITATE.

Probably the knowledge that the building up of a herd or flock till it acquires front rank must be a work of years prevents many farmers from attempting the task, while perhaps a still larger number are held back by the want of a little spare capital to commence with. Nothing is easier, with an unlimited purse, than to establish a collection of valuable pedigree animals, but wealthy men who do this are rather patrons of the art of breeding than breeders, in the strict sense of the term. They are extremely useful in their way, for the prices they are willing to give are most encouraging to the practical men who have devoted the best years of life to the production of pure stock. However, I submit that neither the length of time required for the work to become remunerative nor the absence of spare capital ought to deter the young British farmer who feels a worthy ambition to excel. As for the waiting, he will find that his enterprise will be so interesting in itself, and the increased pleasure in his calling so great, that his reward will not be so long in coming after all, while the want of surplus cash for making such a start as he would wish, only means a more humble beginning and a slower rate of progress. If he will only watch his chances he will find plenty of opportunities at pedigree sales for acquiring a good old cow in-calf or a pen of aged ewes, which are often sold at market prices.

It is quite likely that some farmers might be deterred from breeding valuable stock by dread of tuberculosis, of which we have lately heard so much. It is, however, beginning to be realised that too much has been made of this disease. It is true that it exists to a considerable extent, but it is no new thing, and no more prevalent now than formerly.

The well known experiments of Sir Oswald Moseley, published some time since in one of his sale catalogues, show that it is not hereditary. He isolated several cows and bulls, which had reacted to the tuberculin test, and then bred from them, with the result that some very peculiar brain symptoms

appeared in the first lot of calves, but afterwards fine healthy stock, which were sold at high prices, was produced. There is, moreover, reason to believe that the test, as now conducted, is unreliable. It is often carried out by incompetent local persons, and the tuberculin used varies greatly in strength.

Reasonable precautions and intelligent treatment of such an insidious disease are necessary and wise, but I am persuaded that there is nothing now existing with regard to it which need cause exceptional alarm.

ENCOURAGING EXAMPLES.

Plenty of good examples could be quoted by way of encouragement to beginners. One fact speaks volumes on behalf of pedigree stock-breeding, viz., the almost universal custom for a son to carry on his father's herd or flock. Sometimes—as in the case of the Garnes of Gloucestershire and Oxfordshire—the taste will spread through a whole family. Numerous as they are, I should be afraid to say how many of them are, or have been, well-known breeders. Mr. Thomas Garne, of Broadmoor, a typical Gloucestershire tenant farmer on the Sherborne estate, bred Shorthorns as a contemporary of Messrs. Booth and Bates, and was followed by his son George at Churchill Heath, whose name became known far and wide through his brilliant success in the Show-ring. The late Mr. Hosken, of Hayle, in Cornwall, may also be mentioned, and he is succeeded by his son, who is showing how to improve the most "fashionable" blood by judicious crosses, and to produce Shorthorns which are a credit to the breed. He also keeps poultry on a very large scale, to the number, I believe, of about 10,000 head.

There could be no more practical man than the late Mr. Charles Hobbs, with his fine milking Shorthorns and grand flock of Oxford Down sheep, and it is a pleasure to see three of his sons successfully carrying out his principles. Then we have Mr. Dudding succeeding his father as a breeder of Shorthorn cattle and Lincoln sheep, and with much success.

These are but a few examples chosen at random from the long roll of men who have shown their brother farmers how to make money in bad times. If it be true that "he who makes two blades of grass grow where only one grew before is a benefactor to his country," then at least equally so is he who, by careful study and courageous enterprise, improves its live stock, not only to the advantage of the nation at large but of the whole world.

SUMMARY OF ARGUMENTS.

No doubt there is plenty of scope for the further production of new and improved breeds, but this is somewhat outside the present argument, which may now be briefly summed up.

First, the opening up of vast areas abroad of agricultural land, with the development and cheapness of transit, have rendered ordinary farming, especially the growth of cereals, unprofitable in this country. Second, the demand for meat is likely to increase quite as fast as the supply, and the operative and lower middle classes will absorb as much as can be imported. Third, the wealthy classes are growing, and will probably continue to grow, more luxurious, and insist on being supplied with the very best quality. Fourth, the farmers of England are in possession of every facility for the production of what the rich demand. Fifth, in order to ensure a constant and permanent supply of first-class meat, pure breeds are absolutely essential, though, of course, for this purpose, existing breeds differ widely, each having its own special field of usefulness. Lastly, every farmer should aim at the very highest standard of quality and breeding, not only in his cattle or sheep, but in all the live stock of the farm, even down to the poultry. The question of registration of pedigrees is, after all, a detail, although a very important one, and one which will be found more and more to be essential to complete success. Half measures are never desirable, and he who has sufficient enterprise to attempt to attain excellence in all his stock will seldom stop short of the crowning step of all, and will never rest satisfied till he has entered the inner ring of breeders who go in for pedigree and strict registration.

CONCLUSION.

I would, in conclusion, specially urge on all beginners to form their own ideal, and, from the very first, keep it steadily in view, never allowing themselves to be tempted by the success of others having a different object, to leave the straight path which leads to the goal they have fixed upon in their mind's eye. Let me, as an example of my meaning, take the case of a man who sets himself the task of establishing a herd of deep-milking, pedigree Shorthorns. He should never be induced to try his fortune in the Show-ring except in the special classes for dairy cattle. If he does he will only meet with disappointment. High condition is very taking to the eye, but his business must be to study the milking-points and to select his sires only after rigid investigation of the dairy

capacity of their dams and grand-dams on both sides. In short, whatever the ideal may be, whether a perfect milking-cow or an animal possessing early maturity and the very best beef or mutton, it should never be lost sight of. Specialism is the order of the day, and if only the speciality is wisely selected at the start and followed with persistency, it will surely mean success in due time.

II.—*Economy and Extravagance in the Use of Town Dung for Market-Gardening.* By BERNARD DYER, D.Sc., F.I.C.

DURING the last nine years it has fallen to my lot to conduct, with the co-operation of my friend, Mr. F. W. E. Shrivell, a somewhat extensive scheme of field experiments on a weald clay farm at Hadlow, in the neighbourhood of Tonbridge. One of the objects of our investigations has been to ascertain how farmers engaged in market-gardening or other "intensive" farming, within easy distance of London or other large cities, can most economically utilise the large quantities of dung produced in urban streets and stables. The traffic in such dung is very large, and considerable sums are annually spent in its purchase by farmers and, more especially, by market-gardeners. There is reason to believe that many of the purchasers of town dung rely wholly or mainly upon it for maintaining the high state of fertility necessary for the production of vegetable crops, fruit, or hops. Hence, one of the questions on which we have been trying to throw the light of experimental investigation is whether, either as a general rule or for specific crops, the large manurial outlay entailed by this system is justifiable, or whether the heavy expenditure per acre in purchased dung might not be economically reduced by the partial replacement of such dung by the various well-known chemical, or so-called "artificial," fertilisers of commerce—that is to say, fertilisers of the types more familiar to the ordinary farmer, who produces grain, meat, or milk, and who is practically prohibited by the limited money value of his total output from incurring the expenditure entailed by relying upon town dung to maintain the fertility of his farm.

DISTINCTION BETWEEN TOWN DUNG AND FARMYARD MANURE.

It is perhaps desirable, in order to avoid any confusion of ideas, to insist clearly that this article proposes to deal

with "purchased" dung only—that is to say, with the manure or refuse of town stables and streets—and not with farmyard dung, which is of a different nature and in a totally different position in regard to farm economics. An essential part of the ordinary business of an arable stock farmer is to make dung. In this way he not only minimises the annual tax on his soil by returning to it a large part of what has been removed in straw and forage crops, but he also makes the dung the vehicle for applying to the land the manurial residue of oil-cake and other purchased foods. A substantial part of his success as a farmer depends upon the care taken in the production, management, and judicious use of dung produced on the farm. For certain purposes it is a manure that has no rival; for others it often needs supplementing. The trouble is that, in an old inhabited country like ours, no farm (unless it be one of exceptionally strong natural fertility) can produce enough dung to keep all its fields at anything like their maximum productive power, even for the ordinary crops of a mixed grazing and arable holding. As, however, the rich and succulent dung heap, compounded of rotten straw saturated with the residues of consumed hay, roots, cabbages, corn, oil-cake, and sundry other fodders, will not expand its dimensions beyond certain narrow limits, the careful farmer strives to use to the best advantage the limited quantity of good dung that he can make, and to buy in the market what further "fertility" he needs to help out that which the soil yields in return for his rent.

But farmyard dung is a different thing from town dung. It is impossible in town stables, having regard to the very proper zeal of the sanitary inspector, that manure should be kept there until the straw which forms its basis has become saturated. In fact, the great part of it may be described as merely soiled straw. Then a good deal is made up of street droppings, which are obviously only the solid excreta, consisting of undigested fodder; the far more valuable and manurially active liquid excreta voided by horses in the street being lost. Miscellaneous garbage added to the foregoing—with, it is to be feared, when the dung is sold by weight, an occasional contribution from the water main—helps to make up the total. Let it be admitted at once that, although far inferior to good farmyard manure, this is nevertheless a valuable fertiliser, and certainly not one to be despised or slighted. Its production is enormous, its utilisation is enormous; and it would be a great economic sin if it did not find its way on to the land. But the very magnitude of its quantity and the great sums of money annually expended in transferring it from the cities to the fields

seem to make it desirable that it should be at least utilised to the best advantage.

COST OF TOWN DUNG.

As the result of inquiries, it appears that London dung, put into railway trucks at a London goods terminus, costs, as a rule, from 3*s.* to 3*s.* 6*d.* per ton. Railway carriage up to 25 miles costs rather more than 2*s.* per ton; for 35 miles, about 2*s.* 6*d.*, and, for 50 miles, from 3*s.* to 3*s.* 6*d.* Dung, therefore, delivered in trucks at a station 25 miles from London costs about 5*s.* to 5*s.* 6*d.* per ton; at a station 35 miles from London, 5*s.* 6*d.* to 6*s.*; and at a station 50 miles from London, about 6*s.* 6*d.* to 7*s.* But the railway rate, and also the cost of putting into trucks, will vary with the locality of both the starting station and the delivery station. Then follows the important item of carting from the station to the farm, an item that can scarcely be reckoned at less than 9*d.* per ton per mile. If we assume an average of two miles for carting, we get a total cost of 6*s.* 6*d.* to 7*s.* per ton within 25 miles of London, 7*s.* to 7*s.* 6*d.* at 35 miles from London, or 8*s.* to 8*s.* 6*d.* at 50 miles from London. But very frequently the average two miles' cartage just assumed is much exceeded.

When market-garden carts come, up to Spitalfields, Covent Garden, or the Borough, or to equivalent markets in other cities, they can load up with town dung for the return journey; and, as they would otherwise return empty, it would be unfair to charge the whole cost of return cartage against the dung. Nevertheless, something must be charged for the labour of loading and for the extra food and wear and tear on the horses in making a long return journey under a heavy load instead of with an empty cart. At Hadlow, about 4 miles from Tonbridge station, London dung, including cartage to the farm, actually costs us 8*s.* per ton, and there are probably few farms wheron it costs much less than 7*s.* per ton, except perhaps some which are favourably situated for carriage by canal.

Twenty-five tons per acre per annum, at 8*s.* per ton, means 10*l.* per acre per annum, and this, though a heavy dressing agriculturally, is by no means enough to maintain a market-garden in full fertility. As much as 50 tons per acre, costing from 17*l.* to 20*l.*, is sometimes applied in one dressing by market-gardeners. Are these heavy applications really economically justifiable?

Though a very great many people are not alive to the fact, mere nitrogen, phosphoric acid, and potash can nowadays be bought in a concentrated and readily-available form more

economically than in purchased dung. The practical experiments which will presently be quoted should, however, leave no doubt on this head. But its contents of phosphoric acid, nitrogen, and potash do not constitute the sole attributes for which town dung is valued. Its most useful property is probably the organic matter which it adds in so large a quantity to the soil, so that it gives substance to light land and openness to heavy land, helps the retention of moisture in dry seasons, and facilitates drainage and evaporation in wet ones.

GENERAL RESULTS OF AUTHOR'S EXPERIENCE.

As it makes for clearness to enunciate one's proposition or thesis before proceeding to demonstrate or maintain it, it may now be stated that the consistent result of our eight years of experimenting is to indicate that, although the mechanical or physical advantages, already referred to, of dung are for many crops invaluable, especially in dry seasons, yet they may be sufficiently obtained by the use of far smaller and less costly dressings than are usually employed; and that the mere plant food contained in the larger dressings may be replaced more efficaciously and at decidedly less cost by supplementing the lighter applications of dung with dressings of common fertilisers like superphosphate, basic slag, potash-salts, and nitrate of soda; while for certain very largely grown market garden crops it is distinctly an economy to omit altogether the annual application of dung, and, as far as those particular crops are concerned, to use only chemical and concentrated fertilisers.

GENERAL SCHEME OF EXPERIMENTS AND FERTILISERS USED.

In the majority of cases we every year devote, to each of the many vegetable and fruit crops grown, a section of land roughly one-eighth of an acre in area. This is divided into six plots, of which one receives fifty light loads, or 25 tons of London dung (costing 10*l.*) per acre; while its immediate neighbour has half that quantity, or 12½ tons (costing 5*l.*) per acre. Of the four other plots, three receive the lighter dressing of dung and a dressing of phosphates, with three dressings of three different quantities of nitrate of soda. The sixth plot receives phosphates and nitrate of soda, without any dung whatever.

The four plots receiving phosphates and nitrate, with or without dung, are each sub-divided, one half receiving an annual dressing of potash salts, the other half receiving no potash beyond what is supplied in the dung.

Owing to the number of the crops under investigation, our scheme of experiments is large, and involves at present over 300 separate plots or sub-plots, the produce of each of which is harvested separately; and to avoid further complication it has been necessary to make our choice of concentrated fertilisers as simple as possible. But it may be observed that very much the same results, as we have obtained with nitrate of soda and superphosphate or basic slag, would no doubt be equally well obtained on some soils by the use of sulphate of ammonia, rape dust or fish guano, with bone meal or dissolved bones; or of Peruvian guano, raw or dissolved; each of such manures, of course, being applied in the fashion best suited to its special properties or rate of activity. No attempt at comparison, however, between the individual merits of any of these manures has entered into our scheme of trials, nor is the question of any such comparison involved in the much larger subject which forms the basis of the present discussion.

We have had to deal with a stiff clay loam soil, deficient in lime, and (after a preliminary light liming of the soil at the beginning of the experiments) we have used as phosphatic manure superphosphate, occasionally alternated with dressings of basic slag. The quantity of basic slag used has been from 4 cwt. to 10 cwt. per acre, and of superphosphate from 4 cwt. to 6 cwt. per acre, the cost of annual phosphatic dressing averaging one year with another about 15s. per acre. For the dressing of potash salts we at first used kainit, at the rate of 4 cwt. per acre, but latterly we have used sulphate of potash at the rate of 1 cwt., costing 10s. per acre.

Nitrate of soda has been used in very varying quantity, and is roughly reckoned as costing 10s. per cwt., which is rather outside its average cost, but allows a margin for the expense of carriage and distribution.

In the following summaries, "phosphates and potash" will be understood, then, to mean the quantities and values just mentioned, while the actual quantity of nitrate of soda, being variable, will be stated in each set of the experiments referred to.

Exigencies of space will only allow of reference to a limited number of the crops with which we have experimented, but the selection made will sufficiently illustrate the general trend of our experience.

CABBAGES.

Cabbages may claim our first attention, since, in some variety or other, they form the largest green crop produced by the market gardener. We have grown three types of cabbage, namely, the ordinary autumn cut cabbage, which is sown in

spring, planted out in the summer, and matured in the autumn; the spring cabbage, which is planted out in the autumn, lives through the winter, and is gathered in the spring or early summer; and the savoy. The Table given below sets forth the average results obtained with these three kinds of cabbages over eight crops, seven crops, and nine crops respectively, grown during the last eight years, the scheme and cost of manuring and the average crop weights per acre being shown.

Annual Dressing of Manure per acre.	Annual Cost of Manure per acre.	AUTUMN CABBAGE per acre (average of 8 crops).	SPRING CABBAGE per acre (average of 7 crops).	SAVOY CABBAGE per acre (average of 9 crops).
	£ s.	tons. cwt.	tons. cwt.	tons. cwt.
25 tons London Dung	10 0	23 9	17 10	15 19
12½ tons London Dung	5 0	20 11	16 15	13 3
12½ tons London Dung, Phos- phates, and 2 cwt. Nitrate of Soda	6 15	24 9	17 14	17 10
12½ tons London Dung, Phos- phates, and 4 cwt. Nitrate of Soda	7 15	26 3	17 15	18 5
No Dung. Phosphates, Potash, and 4 to 8 cwt.* Nitrate of Soda	4 0	25 1	18 15	16 15

* 4 cwt. Nitrate of Soda per acre the first five years; 8 cwt. per acre the last three years.

A very rapid glance at the above figures will show that the average increase of crop, obtained by increasing the dung from 12½ tons to 25 tons per acre, has, in the case of both autumn cabbages and savoys, been far smaller than the increase obtained by supplementing the light dressing of dung with chemical fertilisers; while, in the latter case, the cost of manuring has been much less. In the case of the spring cabbages a very modest outlay in chemical fertilisers has sufficed to produce as large a crop as that resulting from heavier dunging.

On the plots on which no dung at all has been used, but on which chemical fertilisers have been applied with liberality, it will be seen that heavier crops have been grown than with even the heavy dressing of dung; and in the case of the spring cabbages the undunged plot, liberally manured with chemical fertilisers, has given the best average yield of all. Indeed, if we only take into consideration the cost of manure and yield of crops, it might be concluded that dung might be economically dispensed with for the cabbage crop; but our experience does not show this. The above figures give average results, but in some dry seasons a decided advantage has been shown to arise

from a small dressing of dung with the other fertilisers, and the view arrived at by Mr. Shrivell and myself is that, for ordinary autumn cabbages and for savoys, a light dressing of dung, supplemented by a liberal application of phosphates and nitrate of soda, is the best treatment.

As far as regards spring cabbages, however, there appears to be little advantage to be derived from a special dressing of dung. This crop will probably be planted in the ordinary course immediately after some crop which had received dung, and in such case it appears that chemical fertilisers, such as superphosphate and nitrate of soda, liberally applied, will do all that is necessary, with an addition, perhaps, on soils not naturally rich in potash, of 4 cwt. of kainit or 1 cwt. of sulphate of potash per acre.

Spring cabbages differ from autumn and savoy cabbages inasmuch as they are planted out after the heat of the year is over, and are, therefore, not liable to be subjected to the hardships which a dry season inflicts upon autumn cabbages, which have to bear the summer heat through a great deal of their growth. The mere mechanical effects of dung in retaining moisture are useful to both the autumn cabbage and the savoy; but for the spring cabbage we believe dung to be rarely necessary for this purpose. Furthermore, it may sometimes have the effect of causing the plant to make too great a growth before the winter sets in, making it less able to resist the winter frosts.

BRUSSELS SPROUTS.

As cabbages form probably the largest crop of the average market gardener, so Brussels sprouts constitute one of his most valuable crops. The market value of this vegetable varies from about 1s. up to about 4s. per "sieve," of 40 lbs. weight, according to time and season. On the whole, probably 1s. 6d. per "sieve" is a fair average value for a grower who is reasonably near a market.

The Table on page 28 shows the average of five years' crops of Brussels sprouts obtained under various modes of manuring. In addition to the cost of manuring, the approximate value per acre of the produce at 1s. 6d. per "sieve," and also the value of the crop in each case after deducting the value of the manure, is given. This last column, representing—after allowing for manure—the sum realisable per acre, to cover rent, rates, labour and profit, shows conveniently the effect of the choice of manure upon the pecuniary value of the crop.

It will at once be noticed that the increase obtained by doubling the dung was small, and was obtained at a great

Annual Dressing of Manure per acre.	Annual Cost of Manure per acre.	Average yield of SPROUTS per acre over 5 years.	Value of SPROUTS per acre at 1s. 6d. per Sieve.	Value of SPROUTS per acre after deducting Cost of Manure.
	£ s.	Sieves of 40 lbs.	£ s.	£ s.
25 tons London Dung	10 0	279	20 18	10 18
12½ tons London Dung	5 0	244	18 6	13 6
12½ tons London Dung, Phosphates, Potash, and 2 cwt. Nitrate of Soda	7 5	306	22 19	15 14
12½ tons London Dung, Phosphates, Potash, and 4 cwt. Nitrate of Soda	8 5	318	23 17	15 12
No Dung. Phosphates, Potash, and 4 cwt. Nitrate of Soda	3 5	292	21 18	18 13

pecuniary disadvantage. When the light dressing of dung, however, was supplemented by chemical fertilisers, there was a considerably larger increase and a very substantial profit.

It will also be noticed, however, that where no dung at all has been used, but only a liberal dressing of chemical fertilisers, the average yield of sprouts has been considerably greater than with even the heavy dressing of dung, and not very far short of the yield obtained by the combination of dung and chemical fertilisers. The saving of the cost of dung has therefore very greatly enhanced the money return per acre. In fact, on land on which no dung at all has been used during the whole experimental period, either for sprouts or for the other crops with which they are alternated (for as a rule the same crop is not grown two years consecutively on the same section), we find, at 1s. 6d. per sieve, that, after deducting the cost of manure, we have a yield of 18l. 13s. per acre, out of which to pay rent, labour, and other outgoings; while on land receiving an annual dressing of 25 tons of dung per acre, we have an average yield of only 10l. 18s., or a difference of nearly 8l. per acre. Any market-gardening reader who may consider that 1s. 6d. per sieve is either too high or too low a figure to take for his particular case, can easily recalculate on any other basis; but it will not be found that the position is materially affected, since it rests upon the simple fact that, with a very considerably increased yield of sprouts, there is a saving of 6l. 15s. per acre in manure.

If dung is used at all for Brussels sprouts, it need only be in moderate quantity. In the opinion of Mr. Shrivell and myself, this crop can be much more profitably grown—especially on land that has been regularly or even intermittently dunged for other crops—without dung, and merely with a liberal application of chemical fertilisers.

CAULIFLOWERS AND BROCCOLI.

These two crops may be considered together, the difference between them being mainly one of the period of the year at which the crop matures.

The results given below are stated in terms of the weight per head of the cauliflowers or broccoli as cut for market; every head being cut as nearly as possible at the same state of maturity, namely, when the "flower" shows signs of beginning to "break."

Annual Dressing of Manure per acre.	Annual Cost of Manure per acre.	Weight per Head.	
		AUTUMN CAULI- FLOWERS (average of 8 years).	BROCCOLI (Summer Cauliflowers) (average of 7 years).
	£ s.	lbs.	lbs.
25 tons London Dung	10 0	3·9	2·6
12½ tons London Dung	5 0	3·2	2·3
12½ tons London Dung, Phosphates, Potash, and 2 cwt. Nitrate of Soda	7 5	4·2	2·8
12½ tons London Dung, Phosphates, Potash, and 4 cwt. Nitrate of Soda	8 5	4·5	3·0
No Dung. Phosphates, Potash, and 4 to 8 cwt.* Nitrate of Soda	4 0	4·2	2·7

* 8 cwt. Nitrate of Soda per acre for the last three years; 4 cwt. per acre previously.

Referring first to the cauliflowers, it will be noticed that, if we take, as a basis of comparison, the average weight of the heads grown with the light dressing of dung, the heavy dressing of dung has only raised the average weight from 3·2 lbs. to 3·9 lbs. When, however, the light dressing of dung has been supplemented by a liberal chemical dressing, the average weight has been increased to 4·5 lbs.; while, where chemical fertilisers have been liberally applied without the use of any dung at all, the average weight has still been greater than on the heavily dunged plot.

Having regard to our experience of some individual seasons, however, we do not recommend that cauliflowers should be grown wholly without dung, although such a course is very often the most remunerative. We consider that the most economical results, on the whole, are obtained by the use of a light dressing of dung, supplemented by a dressing of from 4 to 6 cwt. of superphosphate, 4 cwt. of kainit (or 1 cwt. of sulphate of potash), and about 4 cwt. of nitrate of soda per acre.

In the case of broccoli, or summer cauliflowers, the heavily dunged plot has given, on an average of seven years, a rather poor crop; and the increase in the size of the heads in comparison with those grown with half the quantity of dung is quite incommensurate with the heavy expense. The most economical results, over the seven years, have been obtained by the use of a light dressing of dung, supplemented by chemical fertilisers.

In the case of both cauliflowers and broccoli, the wastefulness of heavy dunging is again apparent.

LETTUCES.

The lettuce results show the averages of five crops of summer varieties and seven crops of winter varieties. These are as follows:—

Annual Dressing of Manure per acre.	Annual Cost of Manure per acre.	Average Weight of—	
		SUMMER LETTUCES per acre. (5 crops).	WINTER LETTUCES per acre. (7 crops).
	£ s.	tons. cwt.	tons. cwt.
25 tons London Dung	10 0	14 18	16 4
12½ tons London Dung	5 0	12 12	13 5
12½ tons London Dung, Phosphates, and 2 cwt. Nitrate of Soda	6 15	15 9	15 5
12½ tons London Dung, Phosphates, and 4 cwt. Nitrate of Soda	7 15	15 7	16 0
No Dung, Phosphates, Potash, and ½ to 8 cwt.* Nitrate of Soda	4 0	14 2	11 13

* 8 cwt. Nitrate of Soda per acre during last two years; 4 cwt. per acre during all previous years.

In both of these crops the increase of the dung has largely increased the average yield; but it will be seen that by far the most economical results have been obtained by using chemical fertilisers in conjunction with a smaller quantity of dung. Our experiments with lettuces—which, it will be remembered, are

carried out in a dry part of the country—indicate, however, that, either for summer or winter lettuces, it is undesirable to dispense altogether with the use of dung.

SUMMER SPINACH.

This is also the case with summer spinach, as will be seen in the following Table, which conspicuously shows how the presence of dung may be essential to obtaining a really full crop, and yet at the same time may be unable to ensure this without assistance from concentrated fertilisers :—

Annual Dressing of Manure per acre.	Annual cost of Manure per acre.		Weight of SPINACH per acre (2 years' average).	
	£	s.	tons	cwt.
25 tons London Dung	10	0	5	5
12½ tons London Dung	5	0	3	14
12½ tons London Dung, Phosphates, Potash, and 2 cwt. Nitrate of Soda	7	5	6	14
12½ tons London Dung, Phosphates, Potash, and 4 cwt. Nitrate of Soda	8	5	7	7
12½ tons London Dung, Phosphates, Potash, and 6 cwt. Nitrate of Soda	9	5	9	0
No Dung. Phosphates, Potash, and 8 cwt. Nitrate of Soda	5	5	7	11

Here, doubling the dung has considerably increased the crop; but when to the light dressing of dung are added, instead of more dung, concentrated fertilisers, including successively increasing dressings of nitrate of soda, we see a progressive increase in the crop until it is far more than doubled.

Even chemical fertilisers alone, without any dung at all, have given an excellent and economical result, yielding half as much again of spinach as the heavily dunged plot, at about half the cost.

BEEBROOTS.

With this crop again, although heavy dunging has produced, over a period of six years, an average of 2 tons weight per acre more than the light dressing, the result has been obtained at an extravagant cost, as will be seen from the following figures, which show that quite as good a crop can be obtained, at a much less cost, by supplementing the light dressing of dung with a liberal dressing of chemical fertilisers.

Annual Dressing of Manure per acre.	Annual cost of Manure per acre.		BEETROOTS per acre (6 years' average).
	£	s.	tons cwt.
25 tons London Dung	10	0	13 11
12½ tons London Dung	5	0	11 13
12½ tons London Dung, Phosphates, and 2 cwt. Nitrate of Soda	6	15	12 10
12½ tons London Dung, Phosphates, and 4 cwt. Nitrate of Soda	7	15	13 15
No Dung. Phosphates, Potash, and 4 to 8 cwt.* Nitrate of Soda	4	5	11 13

* 4 cwt. Nitrate of Soda during first three years; 8 cwt. per acre during last three years.

Chemical fertilisers without dung have not done so well, but have produced as good a crop as the dressing of 12½ tons of dung per acre, and at less cost.

TRIPOLI ONIONS.

We find that dung is a very necessary adjunct to the growth of onions; but here again, as the following Table giving the average results for four years' shows, it does its work most economically if used in small proportion.

Annual Dressing of Manure per acre.	Annual cost of Manure per acre.		Average weight of sound marketable ONIONS per acre (4 years).
	£	s.	tons cwt.
25 tons London Dung	10	0	11 19
12½ tons London Dung	5	0	9 7
12½ tons London Dung, Phosphates, Potash, and 2 cwt. Nitrate of Soda	7	5	13 1
12½ tons London Dung, Phosphates, Potash, and 4 cwt. Nitrate of Soda	8	5	13 16
No Dung. Phosphates, Potash, and 4 cwt.* Nitrate of Soda	3	15	9 1

* 8 cwt. Nitrate of Soda per acre during the last year.

It will be seen that the light dressing of dung gave, on the average, less than 9½ tons of sound marketable onions per acre, while doubling the dressing of dung increased the yield to nearly 12 tons per acre. But when the light dressing of dung was supplemented with chemical fertilisers the increase was from 1 ton to 1¾ ton per acre more.

Chemical fertilisers, liberally applied without dung, have done nearly, but not quite, as well as the light dressing of dung,

and at a lower cost; but the result is far less economical than that obtained on the plots receiving both dung and chemical fertilisers.

It is worth noting that, where no dung is used, the application of potash appears to be essential for this crop. On the undunged plots on which potash has not been used we get practically no crop at all, even though phosphates and nitrogen are supplied with great liberality.

CARROTS AND PARSNIPS.

These crops may be considered together, as they are near relatives.

In accordance with what we believe to be ordinary market garden usage, we have not applied dung directly for either of these crops, but have grown them on land dunged, as below described, for the previous crop.

Annual Dressing of Manure per acre.	CARROTS per acre (average of 6 years).		PARSNIPS per acre (average of 9 years).	
	tons	cwt.	tons	cwt.
25 tons London Dung (applied to previous crop)	15	2	11	4
12½ tons London Dung (applied to previous crop)	12	15	9	1
12½ tons London Dung (to previous crop), Phosphates, Potash, and 2 cwt. Nitrate of Soda	15	14	11	1
12½ tons London Dung (to previous crop), Phosphates, Potash, and 4 cwt. Nitrate of Soda	16	2	11	0
No Dung to previous crop. Phosphates, Potash, and 4 to 8 cwt.* Nitrate of Soda	14	3	8	9

* 8 cwt. Nitrate of Soda per acre during last three years; 4 cwt. per acre previously.

The effect of a heavy dressing of dung, even though applied to the previous crop, is well shown in the case of both the carrots and the parsnips. But it will also be seen that, as far as the carrots are concerned, the ground which had received the light dressing of dung did better than that which had been heavily dunged, provided that the carrot crop was treated with chemical fertilisers; while by no means bad results were obtained on the constantly undunged ground, on which only chemical fertilisers were used.

As far as parsnips are concerned, on the average of seven years, the best crops have been grown on ground manured for a previous crop with a heavy dressing of dung. But, since the cases are rare in which we should recommend so heavy a

dunging for the previous crop, it may probably be safely asserted that the most economical crop of parsnips will be that grown by the aid of chemical fertilisers, consisting of a moderate quantity (not more than 2 cwt. per acre) of nitrate of soda, together with phosphates and potash salts, on land lightly dunged for the preceding crop.

If the best results are to be obtained, potash appears from our experience to be an essential ingredient of the fertilisers to be applied for either carrots or parsnips, even on land that has been previously and constantly dunged.

POTATOES.

Potato manuring has for a number of years been the subject of so many experiments, in various parts of the country, that I would not attach undue weight to the results obtained on our one particular farm; but, as we have recorded seven years' crops of early varieties and eight years of main crop varieties, the results may well be here given.

Annual Dressing of Manure per acre.	Annual cost of Manure per acre.	Average Weight of POTATOES per acre.			
		EARLY (7 years).		MAIN CROP (8 years).	
	£ s.	tons	cwt.	tons	cwt.
25 tons London Dung	10 0	7	7	10	6
12½ tons London Dung	5 0	5	14	8	15
12½ tons London Dung, Phosphates, Potash, and 2 cwt. Nitrate of Soda	7 5	6	9	10	9
12½ tons London Dung, Phosphates, Potash, and 4 cwt. Nitrate of Soda	8 5	6	10	11	8
No Dung. Phosphate, Potash, and 4 cwt.* Nitrate of Soda	3 10	4	8	7	19

* 8 cwt. Nitrate of Soda per acre during last two years.

It will be seen that, with neither early nor late potatoes, can we afford—at any rate in our dry neighbourhood—to dispense with the use of dung; and indeed, for early varieties, taking one year with another, a heavy dressing of dung appears to be necessary in order that the best yield may be secured. With the main crop varieties, however, the best results have been obtained by using a small dressing of dung supplemented with a liberal dressing of chemical fertilisers, including nitrate of soda up to 4 cwt. per acre. The quality of potatoes obtained with this dressing, which by many will be considered a somewhat heavy one, has been excellent, the tubers being free from the property known as “waxiness.”

GENERAL OBSERVATIONS.

These selections from our results may, I hope, be accepted as good evidence in favour of the proposition with which we set out, namely, that, on the whole, the very lavish use, often practised, of purchased dung is extravagant, and that the market gardener will find it well to curtail his outlay in town dung and to increase his purchase of more concentrated fertilisers.

There are two important points, however—namely, quality and earliness—which are not brought out in the quantitative results. As a general rule, crops which receive the aid of concentrated fertilisers, in addition to dung, mature more quickly than those grown with dung alone, and their quality is better. The lettuces, for instance, are more crisp on the chemically manured plots, and the same is also very noticeable with cabbages and cauliflowers as regards the sheathing leaves, and with rhubarb. The rapid growth induced by the concentrated fertilisers appears to favour the production of soft parenchymatous tissue and to discourage the undue production of fibro-vascular tissue. As a consequence the produce is crisp instead of tending to be tough or stringy, as is often the case when dung only is used.

III.—*Specialities in Farming.* By ANTHONY R. CRAGG.

INDUSTRIAL v. AGRICULTURAL METHODS.

It is well known that in all large industrial concerns the various departments are placed under the control of different managers, who are held responsible for the regulation of the work carried on in their particular division of the business. These managers have foremen under them, whose duty it is to see that all work is performed with the utmost efficiency and despatch. Under this method thorough supervision is assured and a considerable amount of competition created amongst the men, each of whom is induced to assist in bringing his particular department to the highest state of efficiency, so far as the goods produced are concerned, and by constant attention to small details, the working becomes so economical that a substantial profit is frequently made in many industries which, under less careful and systematic management, would be unable to exist in anything approaching a sound financial condition.

If we turn from the commercial to the agricultural industry

we find that the plan of sub-dividing the responsibility is the exception rather than the rule, and as a consequence little interest is taken by the men in expediting or improving their work, which is frequently done in a careless and superficial manner.

On the great majority of holdings the tenant is satisfied with such supervision as he can personally give, and is content to depend upon the success, or failure, of the methods of management practised by his forefathers. In many cases there is much to be said in favour of adherence to any system that, through a long series of years, has upon the whole, proved successful. In any event such systems should only be departed from gradually and with caution, and it is to these variations that I propose to allude in this article, because I believe it forms a subject worthy of the particular attention of the rising generation of farmers.

CHANGED CONDITIONS OF FARMING.

A moment's reflection upon the changed conditions under which farming is now conducted, as compared with those which prevailed a few decades ago, brings home to us the fact that some modification is necessary if we are to keep abreast with the times. No doubt the establishment of free trade was one of the first great economic changes that seriously affected agriculturists, but the vast improvements in shipping, the development of railways, the triumphs of science and of invention, the growth of the population in different centres, the opening up of our Colonies, and many other such like changes, have not only created fresh markets for different kinds of produce, but have enabled farmers to reach those markets in a manner and in a shortness of time little dreamt of when the orthodox systems of farming were devised. Agriculturists have of course made many alterations in their methods in order to comply with these fresh demands and new conditions, but, as a rule, they have done so reluctantly and in the most half-hearted spirit, some, because of their inherent distaste of anything that savoured of change, others, because these innovations frequently involved more trouble, fresh lines of thought, and attention to minor matters, which under the old *régime* were not considered of consequence.

MEN WHO BECOME SPECIALISTS.

But, happily for agriculture, prospectors (if I may so apply the term) have appeared in almost every district from time to

time, who have delighted to search for, and risk a little, in "trying" new grounds, or in revivifying and improving the smothering embers of some out-of-date or little valued production. These men have made a *speciality* of some feature of management, and, when gifted with good judgment and perseverance, have materially augmented the revenue arising from the ordinary farm products and have thereby gained high repute amongst their neighbours as enlightened farmers.

One has perhaps made the breeding of high-class pedigree stock a speciality, another the growth of crops for seed, another dairying, or the cultivation of fruit, another vegetables, or the breeding of poultry.

ATTRACTIVENESS OF THE SPECIALISTS' AIMS.

These things may, in themselves, be of small account when compared with the main products of the farm, but they usually form a profitable addition thereto, and as such, may turn the balance on the right side, and I venture to believe that the more farmers we find aspiring to become *specialists* in some particular phase of farm management, the greater will be the inclination to regard agriculture as a thoughtful, interesting, and scientific pursuit. The one danger that sometimes surrounds the study of special objects is the tendency to allow the subject to become too absorbing, and consequently monopolise an undue amount of attention at the expense of other equally important matters, with the result that instead of augmenting returns, and adding to the repute of the farmer, it paves the way towards financial embarrassment. Instances of this sort are, however, very few, and they in no wise affect the principle underlying the subject-matter. That there is great and increasing need for specialists in agricultural matters hardly seems to be open to question. The grower of ordinary farm-produce, or the breeder of ordinary farm-stock, depends altogether upon home markets, and has to be content with the local trade-price for what he offers; but the farmer who has for sale some speciality may look not only for the best class of customers at home, but to the foreign buyer, whose purchases increase year by year. Having regard to our Colonial expansion, there is every possibility of still larger orders reaching us, particularly for well-bred live-stock.

BREEDING OF PEDIGREE STOCK.

During recent years there has been a marked inclination in favour of devoting special attention to the careful breeding of

Shire horses, and, in a few isolated districts, similar attention has been given to other kinds of stock; but so far there is no general tendency in such direction, probably because the majority of agriculturists appear to be under the impression that anything of a special character requires a vast amount of personal attention and a large capital outlay. With regard to the extra demand upon his time, the farmer might with advantage extract a leaf from the commercial man's book; he might very properly delegate all the working details connected with any speciality to a reliable workman (whom he should encourage by extra reward in cases of success), while retaining in his own hands all matters of principle. Suppose, for example, a flock of sheep are kept for ram breeding, or a herd of cattle for the breeding of bulls. It will be found advantageous in the long run to concede a small percentage of the income from the sales to the shepherd or herdsman, as the case may be, in whose care the animals are, as he thereby becomes personally interested in bringing them out in the best condition possible. And similarly with other departments on the farm.

I am, for two reasons, laying some emphasis upon the practice, so prevalent in industrial concerns, of defining, with greater distinctness than has hitherto been done, the results of working the several departments contributing towards the revenue of the farm: firstly, because such a method tends towards more careful and successful management; secondly, because it makes farm labour more attractive, and it is especially necessary that this should be done whenever prominence is given to any department.

FACILITIES REQUIRED.

Every holding offers facilities—more or less—for the cultivation of some description of produce with especial success. One may possess soil, aspect, herbage, and building accommodation favourable for the breeding of high-class draught horses; another equal facilities for breeding ponies or cobs; on a third holding the conditions may be more favourable for breeding pedigree cattle, or some particular breed of sheep; or again, situation and other circumstances may point to some branch of dairying being most successful—perhaps coupled with the rearing of a special breed of pigs. The opportunity is usually there, but what is commonly wanting is the inclination on the part of the farmer to devote the extra care and attention necessary to succeed as a specialist. But once a beginning is made on however small a scale, if upon a good foundation, it is

rarely relinquished. It would be idle to suggest that a young farmer should commence some speciality except upon the most limited scale, for it is only rich men who can afford to leap into public notoriety in a year or two. Let me explain this by describing a case in point which came under my particular notice. An intelligent young farmer rented a mixed holding of some 400 acres. He had sufficient means to stock it reasonably well, but no more. It, however, soon became evident that he aspired to become known as a breeder of Shires and Shorthorns. In his case he stocked the farm in the ordinary way with cross-bred animals, with four exceptions, viz., a brood mare (registered), a bull, and two cows, all having good pedigrees. These animals were purchased at dispersion sales and cost about 20 per cent. above the ordinary non-pedigree value, thus involving a total initial outlay on laying the foundation of two specialities of about 50%. From these animals this breeder now possesses several valuable young Shire mares and a small herd of really good Shorthorns. Latterly he has also sold a few young bulls and colts each year, and now and again a heifer at remunerative prices, besides meanwhile gaining many prizes at local shows. Naturally his interest in the improvement of these specially bred animals has increased with time, for the venture has proved highly profitable, and one that in no way interferes with other matters on the farm. The men in whose charge the animals are have been no less interested or anxious to succeed than their employer, and they equally realise that such success depends on constant care and thoughtful attention. In this way stock-rearing of whatever breed becomes a scientific study, the beneficial effects of which is by no means limited to those immediately concerned.

GROWTH OF FARM SEEDS.

We may now turn to another class of speciality, equally interesting as a study, but less known and perhaps less attractive, because it affords less opportunity to obtain public recognition of success; but so far as the welfare of agriculture is concerned, it is of vast importance. I refer to the growth of special crops for seed. As seed-time comes round year after year, farmers as a rule place their orders with some local merchant, and so long as the seeds thus obtained turn out fairly satisfactory all is well. It is questionable if five per cent. of the seed merchant's customers take the trouble to enquire from what source the seeds are procured, although they form one of the most important elements of farm management. Obviously no seedsman—no matter on what scale his con-

nection or establishment—grows one-tenth of the seeds he sells. The land he occupies is mainly, if not exclusively, devoted to the growth of new sorts of pedigree seeds. All other seeds are of necessity grown elsewhere, *i.e.* farmed out—formerly by English farmers, but now chiefly by the more enterprising Continental and Colonial growers, and the source whence the seeds come has no small influence on their quality and purity. It may, therefore, not be out of place here to digress somewhat in making a few remarks upon this subject which forms one of the specialities of farming.

Up to the middle of last century the main portion of the seeds required by British farmers were grown in this country, and while this system was of great advantage to those agriculturists who made seed growing a speciality, in seasons of scarcity it told hardly upon the ordinary farmer, who then had to pay high prices for seeds. With the introduction of artificial manures came increased demand for seeds, and it then became necessary to look to Continental growers for supplemental supplies, and as time went on the foreign seed trade extended in all directions, so that at the present moment there are few parts of the habitable globe unutilised by the seedsman. The British farmer may only know the local seed-merchant from whom he buys, and frequently he concludes that the merchant is the seed grower. This is not so. As a rule the seedsman is only a distributor of seeds received from various collectors, who in turn are in touch with the growers. Many of the seedsmen having extensive connections, arrange with growers both at home and abroad to keep them in supplies, and there are many farmers who find it very beneficial to make a speciality of catering for them; and others might with equal advantage follow their example. The suitability of a given district for the growth of a particular kind of seed can only be ascertained by experiment, but once success is achieved, the growth may be continued until a distinctly superior article can be produced in sufficient quantity elsewhere. In this way New Zealand and the United States of America supply us with practically all the Cocksfoot used, although some fifteen years ago we were largely dependent on France, Switzerland, and Germany—no seed being at that time sent from the Colony named. During a similar period America has replaced Germany in supplying Meadow Fescue and Timothy Grass—though the Scotch farmers still procure Timothy from local growers. The supply of Red Clover is divided between home producers (chiefly farmers in Suffolk), France, Germany, and the United States. Alsike and White Clover are grown for seed in England, Belgium, Germany, and Austria, but the best quality—those most free from weeds—

come from Canada and the United States. Perennial and Italian Rye-grass come largely from the north-east seaboard of Ireland; the former is also grown in Ayrshire and the latter in France. Large quantities of seed for roots are grown in Lincolnshire, Bedfordshire, and Kent, and the seeds so grown are acknowledged to be superior to those imported from the Continent.

Space will not allow me to deal with this interesting subject at greater length. My object here is to point out the importance of seed growing to the British farmer and the capability of the industry for profitable extension. It presents no difficulty which the ordinary agriculturist cannot easily surmount, and it requires little, if any, extra capital. In Ireland the industry is principally followed by small holders, for whose resources and personal labour it is admirably adapted, the system being as follows:—If a crop of Perennial or Italian Rye-grass seed is desired, it is sown with the corn crop, a small mixture of Clover being added for the purpose of increasing the value of the hay. The year following the corn crop the Rye-grass is cut, put into sheaves, stocked and harvested in precisely the same manner as the corn crop is saved. The seed is then threshed and sold at the nearest market to seed collectors. Many thousands of tons of seed are grown in this way in Ireland. I am well acquainted with two west country farmers who many years ago began to grow mangolds for seed, and so successful have they been that they have now a widely-spread and highly profitable connection.

It is, of course, essential that farmers entering upon the business of seed growing should be personally interested in the work, and it is equally important that the crops should be under the control of a superior and careful workman—not necessarily a man specially trained and able by hybridisation to produce fresh sorts of seeds—as many gardeners can—but a man who will take such pride in his work as will lift him out of the ordinary grooves which are open to the average farm labourer.

SPECIAL CROPS FOR MARKET.

The growth of special crops for market—market-gardening as some prefer to describe it—has been so often discussed that little good will be done by retracing the old ground here. It is, however, a most important subject, deserving of far more attention than it has yet received in many districts. There are few farms that do not comprise one or more fields admirably adapted for the growth of such crops as table peas, French beans, celery, early cabbages, turnips, small fruit, herbs, &c. ;

and still fewer farms that do not include an orchard capable of improvement or extension. It has often been a source of wonder to me why the small, but special crops, should be neglected and despised by the majority of farmers. Their cultivation certainly requires more skill, more care, and proportionally more capital, than ordinary farm crops, and under capable and consistent management they are usually far more profitable.

Outside the counties of Kent and Worcester it is a rare occurrence to find a man specially kept to work in the orchards, and, similarly, except in parts of the counties of Kent, Essex, Bedford, Lincoln, Warwick, Worcester, and Cheshire, few farmers hire a man specially to grow the smaller class of crops mentioned above. On the few farms where special crops are scientifically and systematically grown, a suitable area is usually set apart for their cultivation, and a reliable man trained in such work is placed in charge, who also assists in the preparation for market and disposal of the crops, which by this means prove a profitable adjunct to the farm without in any way interfering with the ordinary operations on the holding.

SYSTEMATIC POULTRY REARING.

One other subject shall complete my illustrations. Unfortunately it is a well-worn theme—I refer to poultry. On the majority of farms the income from poultry is regarded as the pin-money of the farmer's wife, the amount being too insignificant to enter in the farm accounts. The poultry in most cases is managed in a haphazard fashion, the whole being kept at the homestead, so that the fowls may pick up much of the food they require in and about the buildings. No particular person is told off to feed them, to collect the eggs, or to superintend rearing or marketing. These things get done somehow, and a small sum is annually at the disposal of the farmer's wife, with which she is generally satisfied, and consequently sees no reason to bother her spouse with such details as poultry profits; and so things drift.

Here and there signs are, however, not wanting that the younger generation of farmers are disposed to make a speciality of poultry rearing. On some farms, particularly in the Midlands, one may observe portable poultry houses in many of the pasture fields, in which some fifty head of poultry are kept, and around these, during the summer months, numerous chicken coops may be seen. One or two instances have come prominently under my notice, and I was struck to find such good results from systematic management of poultry. In these

cases a man is employed solely in attending to the poultry, his time being fully occupied on his rounds from house to house in feeding, rearing, &c., and in preparing eggs and fowls for market. I admit that it is, at present, most unusual to find an intelligent poultry-man on a farm; but why this is so I fail to understand. Poultry are a natural bye-product of the farm—just as sheep are a main product—and, as such, they are capable of being turned to profitable account. Possibly in a few years' time we shall find many farmers priding themselves on being successful specialists in poultry rearing, just as we now find men proud of their success in stock rearing.

In commercial circles those firms who have made a speciality of some article are invariably able to manufacture superior goods at a lower cost than others who devote less attention to the same production, and in this way many fortunes have been made. There is no reason why a similar result should not follow from the like methods in agriculture.

IV.—*The Cultivation of Cider Apples.*

By JOHN ETTLE, F.R.H.S.

IN Great Britain at the present time orchards occupy about 240,000 acres, and of this total about 80,000 acres are situate in the three chief cider counties of Somerset, Hereford, and Devon. The percentage of orchards bearing cider apples is not given in the Returns of the Board of Agriculture, but in the three counties above mentioned it would probably be about seventy-five per cent. The cultivation of vintage varieties is diminishing in favour of others grown for dessert and culinary purposes, but the encouragement given by the Board of Agriculture should induce farmers and others, especially in the cider counties, to pay more attention to vintage fruits. I know many people will not agree with me in recommending the cultivation of cider rather than market varieties. I do so, however, in the case of the counties above-mentioned, because, although nearly every county can produce good eating and cooking apples, only in the cider counties can apples that will make good rich cider be grown.

CONDITIONS ESSENTIAL TO CULTIVATION.

The following conditions are essential in the cultivation of apples for the production of the best cider:—

- (1.) Suitable soils.

- (2.) Suitable varieties.
- (3.) Good planting, including mulching, &c.
- (4.) Strict attention to pruning, especially while trees are young.
- (5.) Assistance to heavy cropping trees by application of manures.
- (6.) Good supports and fencing.
- (7.) Prevention of attacks of insect and fungoid pests.

SUITABLE SOILS.

The soil often varies considerably, even within the space occupied by one orchard, and the produce of the trees is materially affected thereby. A few weeks since, in one of our chief cider districts in Somerset, a farmer showed me an orchard growing the same varieties throughout, from one side of which good cider could be made, while only very inferior cider could be made from the other side. The orchard was on a slope, but it was not the lower or upper ends that varied so much as the two sides.

The following are the names of the winners of the Champion Medals offered by the Bath and West and Southern Counties Society for cider, and particulars of the soils upon which the apples were grown :—

Date.	Exhibitor.	Soil.
1896	Mr. Tilley, Somerset	Heavy clay.
1897	Sir John Heathcote Amory, Bart., Devon	Alluvial on red sandstone.
1898	Mr. Tilley, Somerset	Heavy clay.
1899	Mr. Tilley, Somerset	Heavy clay on blue lias.
1900	Yeomans, Bros., Hereford	Clay.
1901	Rev. E. P. Spurway, Somerset	Strong loam over clay.
1902	Crofts and Son, Somerset	Heavy, with clay subsoil.

These particulars indicate that where clay is present the best results are obtained. If I were planting chiefly for cider, and could choose my soil, I should select one with a deep rich loam on top and a *well drained* clay as sub-soil. That the clay should be well drained is imperative. Unfortunately, very few planters can select their soil, and many others will not take the necessary trouble before planting their trees to improve such soils as they have. Shallow soils can be deepened, light soils made more retentive, and heavy soils rendered more workable without a very great deal of expense. One of the best mediums

for this purpose is road scrapings, with parings of roadside turf, and leaves that fall on the road. The best scrapings would be from roads where limestone is used. The lime would be of great use to trees; the scrapings would render a light soil more retentive; and the leaves would make a heavy soil more workable. The compost as a whole could also be used to deepen a shallow soil, as is explained later on.

PLANTING, INCLUDING MULCHING, ETC.

The farmer should personally superintend the marking out of stations and the distance apart for the trees. A chain tape, some good stout pegs about a foot long, a mallet, and a long piece of string for a line, are the only requisites.

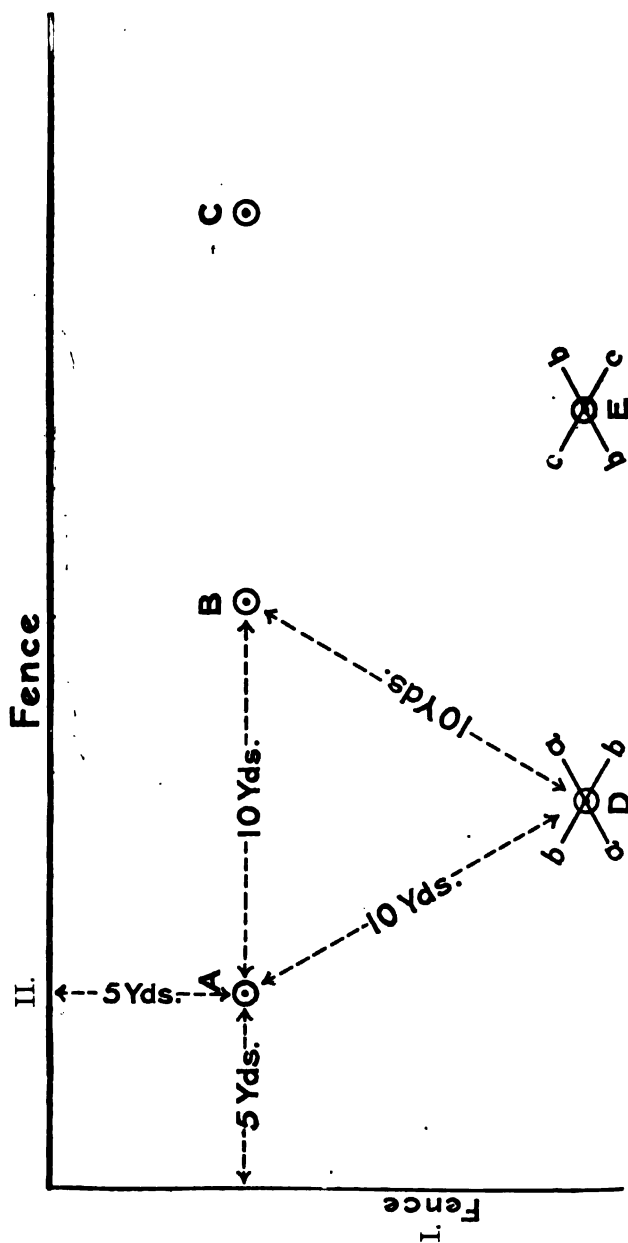
Starting in a corner, and presuming the trees are to be 10 yards apart, the first peg A would be driven in 5 yards from I. and II. respectively, as given in the diagram, Fig. 1. The next trees B and C and the rest of the first row would be 10 yards apart, and 5 yards from the fence. The pegs for row one being in position, to get the stations for the second row, a piece of string 10 yards long, allowing for a loop at each end, is necessary. Put one loop over A peg, and, with a pointed stick in the other loop, using the string like a pair of compasses in drawing, make a mark a a in the grass; next shift the string from A to B, make another mark in the grass, b b, and where the two marks cut or cross each other, drive in the peg for D. Keeping the string on B, make a third mark, b b, shift from B to C, and make the mark, c c, and where the two cross drive in the peg for E.

If there is a straight fence on either side of the field, the first row should be pegged out nearest to it. With a little practice two people can do this work very quickly, and a man and a boy can do it as well as two men. The trees will be planted diagonally, or on what some call the "hit and miss" system, the best for all kinds of planting, whether fruit trees or cabbage plants. It is better than planting on the square, as by this method about fifteen per cent. more trees can be planted in an acre of land.

A further reference to the diagram will show us that each three trees form the points of an equi-lateral triangle. The trees are 10 yards apart each way, from A to B, B to D, and D to A respectively, but the rows A, B, C, and D, E, F will be only about $8\frac{1}{2}$ yards apart, instead of 10 yards apart as they would be if planted on the square.

The correct distances apart for trees vary according to quality of soils. In rich heavy loams 12 yards is none too

much, some give even more. In medium soils 10 yards, and in poorer soils 8 yards would be sufficient ; but it is best to err on



Marking Off Trees. Scale-1 Inch=5 Yards.

the side of giving too much rather than too little room, as not only the trees benefit thereby, but the grass and herbage of the turf as well.

As trees always look best when in straight lines, if there is not a straight hedge or fence on either side of the field, the first row should be put through the centre of the field and other rows measured right and left of it, odd corners being filled up as far as possible.

MAKING HOLES OR STATIONS.

In grass orchards the holes should be 6 feet across. To mark a 6 feet hole quickly and well, use a piece of string 3 feet long with a loop at each end. Put one loop over the peg that marks the station, and with a stout pointed stick in the other loop mark a circle in the grass 6 feet wide. This is not an important detail, but the finished work looks better if the holes are uniform. Then cut out the turf a few inches thick and place it in two heaps on opposite sides of the hole. Next dig out the soil to the depth of a deep spade or spit, putting it in two other heaps; with the crumbs of soil shovelled out, the hole will be about 15 inches deep. Next dig over the sub-soil, and if it is heavy clay it should be thrown out. If good it should be well broken up, and then trodden down quite firmly so as to prevent sinking after the trees are planted. On this sub-soil some planters return the turf, a good plan on heavy soils. On light soils it is better to put the turf upside down over the roots after they are covered with fine soil, as it keeps them firmer. If the clay sub-soil has been thrown out, the road-scraping compost, well mixed with other soil, should replace it.

STAKING OR FENCING.

This should be done, or partly done, before planting. If standard trees are to be grown in cultivated soil one stout stake is sufficient, with wire round the tree to keep off rabbits and hares. The stake is first driven firmly into the sub-soil and the tree planted on the side farthest away from the prevailing winds, so that, when tied, the tree blows away from the stake and is not so likely to be chafed. This is better than planting the tree and then driving in the stake, as the point of the stake may injure some of the best roots. A good method of staking, tying, and wiring is given in Fig. 2. Tied in this way, chafing is impossible so long as the ties are kept good.

Probably the best method—a rather expensive one—of

fencing trees is the one that is most common in Somerset where fencing is done. Two uprights are used, 7 feet 6 inches long, by 4 inches wide, and 2 inches thick, when in position being 2 feet in the ground. The cross-pieces are 2 feet long, 4 inches wide, and 1 inch thick. All the wood is larch, well pickled, and the uprights cost $7\frac{1}{2}d.$ each, and $1d.$ each for pickling. The cross-pieces cost $3s. 6d.$ per 100 feet run, so that with six cross-pieces on each side, or twelve in all, the cost of wood is $2s. 1\frac{1}{2}d.$ per tree. Two cross-pieces are nailed

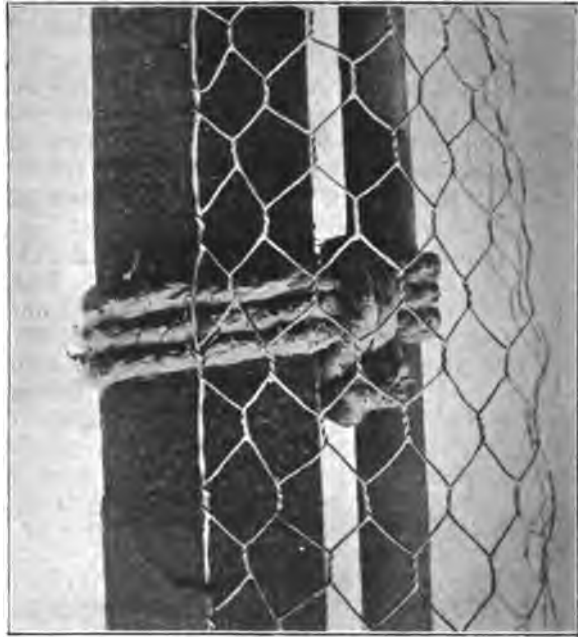


FIG. 2.

on, and the fence is put in position, 2 feet in the ground, before the tree is planted. It looks better if the uprights are placed in such a way that they are in a line with the row of trees and not cross-wise.

Sometimes three uprights are used, but it costs more, and they are not much more efficient, especially if old barrel staves are used as cross-pieces with the two uprights. Such fencing should last as long as the trees require it. Sawing and putting in can be done in wet weather. The other cross-pieces could be fixed at leisure.

PRUNING ROOTS AND PLANTING TREES.

After the supports or fences are in their places, planting is proceeded with ; but before this is done the roots must be gone over carefully, and all the bruised ends cut away with a strong sharp knife. This will allow them to heal over quickly, and throw out young roots to feed the tree when it begins to grow. Unless this is done the cuts on the roots are like saw-cuts on branches, and will not heal over but die away, and consequently the tree has not the chance to grow which it should have. In pruning the roots when the tree is stood upright, the cuts should be made from the under side upwards, and there should be a sloping cut, so that the tree, when planted, will "sit" on the soil. Now place the tree in the hole to see if it is right as to depth. A good guide for this is the soil-mark on the stem of the tree, which should be level with the surface of the soil on each side of the hole, or a few inches higher.

In planting, the work of two persons is required : one to hold the tree in position and spread out the roots, the other to fill in the soil. Each layer of roots should be spread out separately, and, if necessary, the roots should be pegged down in their places, so as to keep them quite straight, and give them a gentle downward slope. If there should be a carrot- or tap-root it must be cut off ; but in most cases this tap-root would have been properly stopped when the young stocks were transplanted in the nursery. As the roots are spread out, work in some of the best and finest soil all round them (one layer at a time), and tread firmly down as the work proceeds. When all are covered, the top layer of roots should be about 3 or 4 inches below the surface of the soil, but on clay soils shallower planting would be better. It is decidedly not a good plan to replace the turf over the soil, as it prevents the air entering freely to the roots, and it has been proved over and over again that trees do better without the turf growing over the roots. If not placed in the bottom of the hole, it should be chopped up and worked in as planting proceeds, grass downwards, and then trodden firmly in. Firm planting is most important, as roots have a better anchorage in firm soil than in loose, more plant food is within their reach in a given space, and the growth of the branches will be sturdy and more likely to produce fruiting spurs. Every little fibrous root should be carefully preserved in planting, as these are the feeders. Some nurserymen do not seem to understand this, as they send away trees without any packing material around them, with the result that the fibrous feeding roots shrivel and

die, and the trees cannot grow well in the spring, as there is nothing to keep them supplied with nourishment.

The transplanting of a tree is the most critical incident of its life. It has been "nursed" in the nursery, and, when it is taken from there to be sent away, it is much in the position of a boy or a girl sent away from home for the first time.

The purchaser should visit the nursery where the trees are growing and select his trees. He should then have the holes dug, stakes or fencing prepared, and a little better soil got ready, if necessary, so that when the trees arrive they can be planted at once. The trees when planted should be tied securely to prevent the roots shifting, and provision should be made for keeping away rabbits, hares, &c. To prevent the soil becoming too dry in the summer, a mulching of straw dung should be spread all over the surface of the holes. A good barrow-load per tree is sufficient, and this will prevent evaporation of moisture from the soil. Peat-moss litter manure is as good as, if not better than, straw dung, and is sometimes more easily obtained. Failing either of these cut grass or fern will make a fairly good substitute.

ATTENTION TO PRUNING WHILE TREES ARE YOUNG.

There is a good old proverb which says "Train up a child," &c., and this is equally applicable to fruit trees. The only training practicable after trees are planted in the orchard is in the pruning, and a man skilful with his knife can make his trees grow almost any way he desires. The difficulty in country places is to get a man who understands pruning *young* trees, those who can prune old orchard trees being much more easily found. Any one who plants trees should learn how to prune them, and he will find it very interesting work. This knowledge can be obtained from the county instructors in gardening, by either attending the classes arranged by the Education Committees, or by securing a visit to a particular orchard by the instructor.

The question whether it is better to prune a young tree in the early spring or late winter after it is planted, or to let it stand a year before pruning, has been made the subject of experiment, and has very generally resulted in favour of the first-named method. The results of experiments by the writer are shown in Figs. 3 and 4.

The trees, at planting, were as near as possible of the same size and shape, and of the same age—four years. They were planted late in February, 1901, such late planting being

unavoidable. The tree shown in Fig. 3 was at once cut back, the young shoots being shortened by about two-thirds, and they grew away well, as may be seen on reference to the illustration, taken a year later. As there are sufficient branches on it to form a well-balanced head no further cutting-back will be necessary. Looking at it as it is shown in the illustration, some of the branches appear to be crossing each other, but such is not the fact, as they are all well placed. As all the cuts were made to *outer buds*, the leading shoots would grow well away from each



FIG. 3.

other. And that is the only proper way of training young trees. Before making each cut, the pruner should consider as to where he would wish the next shoot to grow—naturally, away from the centre of the tree, so the cut is made to an *outer bud*, and close to it. After this no cutting-back will be required, but the tree must be looked over every year, and if a branch should show a tendency to cross another or grow to the inner part of the tree, it should be stopped.

The other tree, Fig. 4, was left unpruned, and produced abundance of fruiting-spurs, but only about 4 inches of new

wood on each branch. If left longer unpruned it would have made a straggling head, probably breaking down with the weight of fruit, and to prevent this it had to be cut-back much harder than it would have been the first year.

Another tree was left unpruned for the first two years, and, as it was a variety that bore freely in a young stage, the branches had this year to be tied loosely together to support each other. In pruning, as in other experiments, things are occasionally



FIG. 4.

done in a wrong way, and undoubtedly this was so in this case.

PRUNING OLD TREES.

If constant attention is given to pruning *young* trees, and is continued till they are well on to middle age, they will be good and symmetrical when they are *old*. But supposing a tree is forty years old, has grown well, and never been pruned since it was planted, it is an unthankful, if not impossible, task to bring it into good condition. If we endeavour to do so, we have to cut away such a lot of wood that the tree looks very

naked. It is better therefore to proceed with caution, and not do the pruning all at once.

In such a case the first thing would be to cut away all under-branches that either are shaded by others above them, or are bending down within the reach of cattle, as well as such wood as is in the centre of the tree. Any fruit borne on these branches would be of very little use for cider, as it would be very watery. The more fruit is exposed to the sun the more sugar it contains when mature, and the more sugar it contains the better cider it produces.

The next year the trees should be gone over again and the outer branches attended to, the worst of those that cross each other or show a tendency to grow inwards being cut away. It is not necessary to thin cider apple trees so severely as dessert and culinary varieties, size being the great essential with the latter, whereas medium-sized will make as good cider as large fruit.

There are many methods of pruning, but I have found a curved aerial pruning saw, fixed to a long pitchfork handle, very convenient. Unless the trees are tall, the work can be better done from the ground, where it is easier to see which branches should be removed than when one is in the tree itself. The handle should be made with a catch at the end, so that the saw can be removed and replaced by an aerial chisel, with which the saw-cuts can be pared over, so as to allow the wounds to heal and the bark in time to grow over the cuts. Without this paring over they never heal.

Every one who has an orchard should learn how to prune and not rely on others to do it. Some men who undertake the work do it as it should be done, but in some districts it is difficult to get competent men. An example of this came under my notice last year, where the operator had evidently gained his idea of pruning from seeing badly-pruned pyramid or bush trees in a garden, as he cut back all the young wood on the outside of the tree and left the under-branches and inside wood almost untouched. His employer has since attended demonstrations and will in future do his own pruning.

APPLICATION OF MANURES.

I have no hesitation in saying that that part of a farm which receives the least attention as regards adequate manuring is the orchard.

Most people seem to expect trees to go on bearing not only year after year, but generation after generation, with no assistance but what they get from the manure of animals feeding

there, which manure, unless the animals are receiving something more than the grass of the orchard, is practically valueless. Sheep folded in an orchard and fed, or pigs running in an orchard and fed, enrich the soil, and the trees are greatly benefited thereby, but unless this is the case, the orchards should receive some manurial treatment.

The most economical way of manuring trees is by using tank manure, a ton of which, unless diluted with surface water or water draining from roofs of buildings, &c., is worth two tons of dung, as will be found on reference to any good book on agricultural chemistry.

In every farmyard there should be a tank into which the drainings of stables, cow-stalls, and pig-styes should run. If a chain pump is attached to the tank and a horse-barrel provided, the liquid can be carted out from time to time as the tank fills. A spreader should be fixed on the barrel, and the horse should be led very slowly up one side of a row of trees and down the other. As a good spreader should cover nine feet each way, most of the roots will be manured. For younger trees the spreader should be removed and a few pailsful poured round each tree as may be thought necessary.

A still easier way of utilising liquid manure is sometimes seen when the tank is at a higher elevation than the orchard. A drain is carried from the former to the latter, a surface drain or furrow is cut along the top of the orchard, and other furrows cut from this down the slope, to be stopped or opened as desired. This latter method is, however, offensive, and does not spread the manure all over the ground, but it is better than the liquid being allowed to run to waste as is too often the case.

Artificial manures are sometimes more useful than farmyard manure, especially when an orchard is distant from the home yard, for, being more portable, they are more easily carted about and applied. When we know what a particular crop requires, we can give it its special plant food better by the use of a mixture of artificial manures than by means of dung.

The special elements of plant food required by apples are phosphates, potash, and lime, large proportions of these being found in analyses of the ashes of the wood and fruit respectively, but the proportion of each would vary with different soils, and the most variable would be the amount of potash and lime.

As most clay soils are rich in potash, phosphates and lime are the most necessary for them. Peaty, chalky, gravelly, and sandy soils are poor in potash, so the proportion of the latter for such soils should be increased. Soils on the limestone, lias, and chalk formations are naturally rich in lime,

though it is not in a readily available form, and therefore an application of fresh slaked lime will do apple trees in such soils a great deal of good. Lime is also of the first importance for sweetening old, sour orchard turf and soil, and is one of the best things to use for getting rid of moss, both in soils and on trees.

For heavy soils, potash, as mentioned above, is scarcely required, consequently only phosphates and lime are needed; but these should be used separately. There is a great variety of phosphatic manures, but only those most easily obtainable will be mentioned.

Superphosphate, probably the commonest of phosphatic manures, being also quickly soluble, reaches the roots of trees soon after it is applied if the weather be showery. The quantity per acre, if used alone, should be not less than 6 cwt. The results would, however, be better if it were mixed with an equal quantity of dissolved bones, as in this case the superphosphate would act first, and when the goodness from it had been used up, the dissolved bones, being less soluble, would be available. An equal quantity of each should be used per acre, and the best time to apply it is February or March, so that by the time the manures are dissolved and washed down to the roots, the latter becoming active would get the full benefit of them.

Basic slag is a phosphatic manure, but is of very little use on dry soils, as they do not contain enough moisture to dissolve it. Its best results are on clay and other heavy soils. As it dissolves so slowly, it should be applied in November to be of use the following year.

Kainit is the most easily obtainable of potash manures. It does not dissolve easily, and is, therefore, not quickly washed out of the soil. On such soils as require it (mentioned on page 54), the dressing should be from 5 to 10 cwt. per acre, or, if a full dressing is required, mix superphosphate and dissolved bones with it in equal proportions, and use the mixture at the same rate. Potash manures will assist in heightening the colour of apples.

Lime is best used newly slaked, and early in the year, in quantities varying for heavy, sour clay, heavy soil, and light soil respectively, from 8 to 4 tons per acre.

Most of the dressings recommended are full ones, but the turf, acting as a filter, would retain a great deal of the plant food.

If fruit trees, either in orchards or gardens, were given more assistance by systematic manuring, we should not hear so much of trees bearing only every other year. Carrying a

heavy crop one year, they exhaust the soil and themselves, and have not sufficient strength without some manurial assistance to perfect fruit buds for the following year.

RENOVATION OF TREES BY REGRAFTING.

In a large number of orchards trees are found bearing apples of little use for cider-making or for anything else. Many of them are chance seedlings, the names of which are unknown. Being seedling trees, they are usually strong



FIG. 5.

growers, making good stems and heads, with healthy bark. It matters little what the age of the trees is, grafts will "take" well on them, if the bark is clean and healthy.

When a tree is to be re-grafted, the branches should be cut off about a month before grafting time, and about a foot higher up than where the grafts would be inserted. Then at grafting time they should be cut down to the desired height, making clean cuts to graft in. The right height for grafting must be decided by the state of the bark. It may be possible to do it on the main branches, as in Fig. 5, but if the bark

is not healthy, then we must go higher up till we find it in good condition.

The best method of inserting grafts in the large branches is that one known as crown, rind, or bark grafting. This is also the simplest of all methods, and the way to set about it is to cut off the branch with a sloping cut (if it is growing upright), so that the moisture will not stand on the cut surface. Pare the cuts over very carefully with a good knife, so that the bark will heal up. The graft is prepared by making a cut on one side, about two inches long, perfectly smooth and straight, and tapering to a thin point. The top of the cut should be opposite a bud, which will, when inserted, be about level with the cut-off end of the stock, so that when it grows, the graft will swell by the junction with the stock, and a stronger union between the two will result. Another important detail in making the graft is to see that the leading bud, or the end bud making the leading and strongest shoot, is pointing away from the stock and towards the outside of the tree.

Preparing the stock is much more simple. A cut, about two inches long, is made in the bark, but only just through it, at the top of the stock. Then with a piece of hard wood or bone, shaped like the end of the graft and about the same size, make a receptacle for the graft by carefully pushing the wood or bone down between the bark and wood, lifting the bark a little on each side of the cut. If the sap is flowing freely the bark should part easily; otherwise it is better to leave the work for a time until it does. The graft is then inserted, keeping the cut side next to the wood, with the bark overlapping it a little on each side. Tie in securely with matting or very soft string, and cover the cuts where grafts are inserted with wax. Clay is more commonly used, but wax is cleaner, just as efficient, and gives not the least harbour for American Blight and other pests. Recipes for making wax, and the way to use it, are given on page 58. Three or four grafts can be put on each branch, and, if possible, they should be on the side where the bark is thickest, as they will there grow more freely.

Another method of grafting is "the cleft or split." The stock is split, a wedge is inserted to keep the cleft open, and the bark on both sides of the cut is made perfectly smooth. The graft is made ready by a wedge-shaped cut on each side about two inches long. Two grafts can be put in, one on each side, so that the bark of both grafts and stock fit together nicely. Draw out the wedge, and the cleft, closing up, holds the grafts firmly; tie in and wax over. Grafts take very well this way, but sometimes the moisture standing in the cleft causes the wood to decay.

When crown or rind grafting has been done, the grafts are liable to be blown out by the wind, not so much perhaps in the first as in the second year. This may be obviated to a great extent by cutting the young branches hard back in the winter after grafting. The grafts on the tree in Fig. 5 "took" well, and were cut back as in Fig. 6. This caused them to grow more stoutly, and close to the stock. Had they been left their full length, the leverage would have been greater when they began to grow again, making them more liable to be blown or broken out.



FIG. 6.

Grafting wax can be used either warm or cold, warm being best. To use warm the following are good recipes :—(1) Equal parts by weight of kerosene wax, burgundy pitch, and olive oil, melted together. (2) Three parts or pounds of resin, the same amount of beeswax, and two parts of tallow. The latter is rather objectionable owing to its smell while melting.

To use cold, mix one pound of yellow or kerosene wax, one pound of turpentine, half a pound of burgundy pitch, and a quarter of a pound of mutton suet. Melt altogether, and, when cool, apply with a piece of smooth flat wood, or, what is still better, a putty knife.

The wax does not become quite hard, and is pushed off by the grafts when they grow freely. When it is seen that the grafts have taken, a strand or two should be cut or loosened to prevent the ties pinching them.

A handy "contrivance" for use with warm grafting wax may be made with a couple of old tins. The one I use is made from a biscuit tin with a double lid and a golden syrup tin. A hole, about an inch square, is cut in the centre of the inner lid, and a smaller one on each side for ventilation. The small



FIG. 7.

lamp, which burns petroleum, can be made by a handy fitter from a piece of waste copper pipe about three inches long, with an ordinary burner fitted. It is placed in the biscuit tin so that the flame is directly under the centre hole in the inner lid; over this stands the syrup tin containing wax, which is kept nicely melted, and can be applied with a small paint brush. (See Fig. 7.)

INSECT AND OTHER PESTS.

Insect pests may be divided into two sections, those living by suction and those by biting. The former exist chiefly on

the sap and have to be destroyed by the application of insecticides to their bodies, but the latter feed on the leaves, blossoms, and fruit, and can therefore be got rid of by putting poison on the leaves and fruit of the trees affected.

In the first section, the American Blight is one of the most troublesome, especially with apples. It attacks young trees in the nursery, very frequently at the junction between graft and stock. In older trees it gets into crevices and bruises in the bark, and propagates very rapidly, causing swollen—sometimes mis-named “cankery”—wounds, which are really very different to canker.

The blight can easily be detected by a white fluffy substance that exudes from its body. It can be checked entirely on young trees by dressing them during the winter and summer as mentioned below. In the winter, petroleum brushed carefully into the infested places will kill every insect it touches. In the following summer, watch carefully to see if any have been overlooked, and, should such be the case, brush a little methylated spirit or any good insecticide well into the affected parts.

On older trees blight is more difficult to get rid of, and on big orchard trees its extinction is practically impossible; but, where practicable, the same winter dressing should be applied all over infested parts of the tree. Then cut away any diseased bark round the parts most affected, and paint them over with warm grafting wax. Watch carefully in the following summer, and, if the blight reappears, dress as advised in the case of young trees.

Other aphides, closely allied to the American Blight, are the green and blue flies that cause the leaves on apple trees to curl up and shrivel. With these, as with any pest, prevention is better than cure, and, where trees have been infested with them in the previous summer, the following preparation, if carefully sprayed over the trees, should destroy any insects or eggs remaining. It should be used in the winter when the buds are dormant, as the petroleum would be injurious to opening buds and leaves. Take four ounces of soft soap (the best obtainable) and put it in a saucepan with a quart of *soft* water. Let it gently come to the boil, carefully stirring it the while. When the soap is well mixed, add two wineglassfuls of petroleum, first removing the saucepan from the fire to prevent accidents. The oil will mix readily with the soapy water and form what is termed the soft soap and petroleum emulsion. Add sufficient hot soft water to make a gallon, and spray it on the trees as hot as the hands can bear it.

In the following summer, as soon as the leaves unfold,

spray the trees with a mixture of two ounces of soft soap, and the extract from four ounces of quassia chips (obtained by boiling the quassia for at least half an hour), added to a gallon of soft water. Spray this on the trees with a fine sprayer, and repeat the process two or three times at intervals of a fortnight. Of course it is easier to make up larger quantities at a time in above proportions.

The Apple Scale is a minute insect, about three times as long as it is broad, and, resembling the colour of the bark, it may pass unnoticed. It injures the bark by piercing it, and the tree by sucking the sap. One little scale would not do much damage, but, when a square inch of bark is attacked by hundreds, the tree sooner or later suffers. When the insects are cleared off, the bark will have a scabby appearance. In the winter the old insects die, and their dead scaly skeletons shelter the eggs for producing the next generation. Trees so affected should be dressed during the winter with gas-water (called by some ammoniacal liquor) obtained from gas-works. In applying it use a soft scrubbing brush and well scrub the bark, as this will remove the old scale and destroy the eggs. As soon as the sap rises in the spring any eggs that may be left will be hatching, and to kill these the soft soap and petroleum emulsion should be used on the wood of the trees, or, when the petroleum would injure the leaves, quassia extract should be used instead.

The worst of the biting pests is the Winter Moth Caterpillar, which eats the leaves and blossoms of the apple and other trees. When attacks of these are feared, spray the trees, while the buds are dormant, well with soft soap and petroleum, or the alkali wash as given for moss and lichen. This should destroy the eggs. When the flowering is over spray with a solution of soft soap and Paris green, made by boiling 2 lbs. soft soap in enough soft water to dissolve it, mix in one ounce of Paris green (in paste form) and add water up to twenty gallons. Keep well stirred and spray on trees as a "mist," not using enough to make it run off the trees like rain.

There are many other insect pests which it would take too long to describe here, but a description of their full life history will be found in the leaflets issued by the Board of Agriculture.

CANKER.

This is a fungus (*Nectria ditissima*), and is often confounded with American Blight, the wounds caused by the latter being often called canker. They are, however, in no way similar, as the canker is a vegetable parasite, while the blight is an insect and belongs to the animal kingdom. The effect of their attacks

is also different, although we sometimes find both in the same place of infestation. The difference in the wounds caused by them is that round the wounds caused by canker there is very little swelling, whereas the blight always causes swellings.

The canker is propagated in much the same way as the potato disease and other fungi, by means of spores. Blown about by the wind, or carried from one tree to another by the fingers in pruning, &c., if there happens to be a wound or bruise in the bark, the spores germinate, and, making the bark their host, grow in it, and as they grow the bark decays in curious long-shaped rings. In about three years it will spread all round a fairly large branch, and kill it; smaller branches are killed in a few months.

To prevent canker the trees should be given an opportunity to grow in a healthy manner and then, if attacked, they will not suffer so much as unhealthy trees, which succumb much more readily than healthy ones to attacks of all kinds of pests. When the trees are at rest they should be sprayed with a strong solution of spraying powder as sold for potato disease prevention, or one of the following preparations:

Bordeaux Mixture. Suspend in a bag in a wooden or copper vessel six pounds of copper sulphate and dissolve in three gallons of water. In another barrel slake four pounds of lime, and then cover with water to exclude air. This will be sufficient for fifty gallons of spraying solution. In mixing, pour in the copper sulphate solution first and then add the lime, straining both through a very fine sieve or coarse canvas. Only such quantity as is required for use should be mixed at a time. Spray on trees with a fine spray as advised for the Paris green solution.

Veltha Emulsion. This is a proprietary article which I have proved to be effective in preventing the spread of canker to the young branches.

Neither of these preparations will check the disease when it is in the bark, as it cannot then be touched by them, but if the canker has not got too great a hold on a branch it can be checked by first painting with, and then rubbing in well, either of the preventives. Then cut away diseased bark and paint over with grafting wax as described for American Blight.

MOSS AND LICHEN.

These also are vegetable parasites, and, though said to be more prevalent in damp situations, are as frequently found in higher and drier ground. The following remedies will in most cases be found effective:—

(1) Dust fresh slaked lime well over the trees while they are damp. This is not a pleasant occupation, but if a bag made of very coarse sacking is half filled with lime and attached to an apple pole, the dusting can be done without much inconvenience to the person using it, if he stands on the windward side.

(2) Make a wash by dissolving one pound of caustic soda in hot water, and add one pound of commercial carbonate of potash. Dissolve in another vessel half a pound of soft soap, mix the whole together and add water to make ten gallons. This wash can only be used when the buds are dormant, and great care should be exercised in its application, as it has a burning effect on skin and clothes. An old suit of clothes should be worn while using it, and a pair of india-rubber gloves on the hands.

A good sprayer for tall trees is a semi-rotary pump fixed to a petroleum barrel. Armoured rubber hose is the most economical for use with the machine, as it lasts much longer. The spraying should be done on a calm day, and a nozzle used that will produce a fine spray.

VARIETIES OF CIDER APPLES.

If the names of market apples are bewildering, those of cider varieties are much more so. Most of the former can be recognised, but probably no man living could name all the latter. Hereford is, I believe, the only county where serious efforts have been and are being made to classify and name apples in their various sections. In Somerset I find in different districts almost entirely different varieties, only a few standard varieties such as Kingston Black, Jerseys, and Horners (or Hangdowns) being generally known. There are besides (as I stated when dealing with re-grafting trees) many local seedlings, none of which are known a few miles away from their own district, and no one can say whether they are of value or not for cider-making. I hope, however, this will be remedied in Somerset in time, and that steps will be taken with a view to obtaining some definite information upon the subject. The different cider counties have also their own known particular varieties. Many grown in one county are not known in others. Two varieties, however, stand out prominently—Kingston Black in Somerset and Fox-whelp in Hereford.

V.—*Thoughts on Horse Breeding.*

By HAROLD SESSIONS, F.R.C.V.S., F.H.A.S., F.R.G.S.

ITS UNCERTAINTIES.

ON many farms it has become an accepted axiom that breeding horses is a more uncertain business than breeding any other class of farm stock. The market for horses is limited. There are not the same facilities for disposing of horses at any period of their lives as for cattle, sheep, and pigs. A horse is not sold on his appearance alone. He has to be docile in his disposition, and to have received a certain amount of education. He is rarely wanted by any one until he has reached the age of five years, and, if he is of value, he must at that time have escaped the numerous accidents and ills that are common to colthood.

The produce of mares also greatly varies. Sometimes the foals develop into big, bony, carty animals; at other times, and from the same parents, a small pony-like animal is produced. This also happens with cattle and sheep, but as they are sold so much younger, and those that are not required for breeding are killed before attaining their full growth, we do not notice the differences in size, conformation, and disposition in them to the same extent as we do in horses. I think, however, we shall find, if we look closer into the matter, that the uncertainty in breeding in a haphazard way is as great among one class of farm animals as it is among another.

Where, for many generations, breeding of any one class of animals has been carried on with the fixed intention of producing a certain type, and the work has been done with intelligence, the produce will show great uniformity. By this means we produce our chief breeds—our Shires, Clydesdales, Hackneys, and Thoroughbreds.

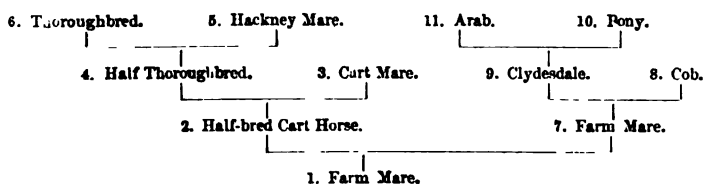
CHIEF FACTORS.

It has been well said, with regard to human beings, that the three chief factors in determining what we each are and shall be are Heredity, Early Training, and Environment. I think the most suitable manner in which to consider the breeding of horses on farms will be to take each of these three conditions and to see what they really mean.

HEREDITY.

Heredity being the first and strongest influence, we may well begin with it. We start with the old familiar saying,

"Like produces like." That is what we have in our minds. On our farm we may have a fairly big, well-made, heavy plough mare. We think we will breed a big cart-horse from her, one that will grow to seventeen hands high and be valuable to sell for town use. We mate her with a big cart-horse, and on the principle of like producing like, we patiently wait for the produce to grow and turn into money. We are often disappointed to find that we have only obtained a small animal, something of the type of the mother, but less valuable, and we speak of it with a little touch of bitterness as one of the unsatisfactory results of horse breeding. Let me supply a pedigree of the mare, for although she may have been on the



farm for years, no one, it may be, knows anything about her breeding, and the produce may be like any of the immediate ancestors, but we cannot tell which. In one foal we may see ancestor No. 5, in another ancestor No. 9, or No. 8, or even No. 11, and if the mare has several foals, they may each have different characteristics. Another term for Heredity is Pedigree. I have before now heard it remarked that breeding to pedigree is a very useless proceeding, and that better results can be obtained by mating two animals that are like the animal you desire to produce than by attending to their pedigree. I venture to think that no satisfactory breeding can be carried out without an intelligent knowledge of pedigree. The danger of studying pedigree is that we may allow ourselves to give too much attention to individual show-yard animals instead of keeping in our minds the peculiar types and special characteristics we desire to produce.

I was much interested in noting the effect of heredity during a stay in North and South America. In those countries horse breeding is carried on so extensively that there is a much better opportunity of judging the general results than we get in England. On both continents are large numbers of nearly wild horses. They are under-sized and in-bred, but as saddle-horses in their own countries they are useful; yet, although they are hardy and used to the climate, their commercial value is small. As the new countries get settled up and enclosed by wire fences, the herds of horses become unprofitable stock, and their owners

begin to think of some means by which they can improve them and turn them to account. With these horses you have a fixed type on which to begin, and one of the first problems is to increase their size. On some of the bigger places the mares are separated out, and a number, perhaps a thousand, of the strongest and best looking are mated with stallions of some known breed. Usually the breed selected for the first cross is the Clydesdale, though occasionally Shires or Percherons are used, and, quite exceptionally, some people try Hackneys, Arabs, &c. If the breeder is going to do any real good, he must make up his mind what it is he wants to produce and keep breeding for that result. If a thousand mares have been mated with Clydesdales for some years, a stock of young half-breds are coming along. If out of these the best are selected and again crossed with Clydesdales, and the process repeated again and again, you gradually breed up a stock of animals that have Clydesdale characteristics, and you produce a fixed type. The process of fixing the type is a much longer one than many people imagine, and often has to be handed from father to son before it is completed. In breeding for a definite result we must pay attention to the hereditary questions involved. for if we do not, we must accept what comes, trustfully hoping some day, somehow or somewhere, it will prove profitably marketable.

EARLY TRAINING.

It may be said that with horses it is hardly needful to discuss the question of early training, but it is one that is well worth some consideration. In England horses are kept in small fields and are accustomed from their colthood to the sight of man. Abroad, where horses are bred in large numbers, they roam over great fields or even over mountains and valleys, and only once or twice a year are driven together and handled for a short period by man. The consequence is that they are nervous and timid when first broken in, and it often takes a long time to make them thoroughly reliable and gentle. Our idea that a horse should be bred at the cart tail is a very excellent one, and I was never so strongly impressed with this truth as when visiting some of the large horse-breeding ranches in the United States and in the Argentine. Although you may breed good horses on a large scale, the fact of their running together in great numbers makes them wild and much more liable to accident and injury than when they are always surrounded by human beings. In the eastern and some of the central parts of the United States, where the American driving horse is bred, it is the common practice to

let the foals run alongside the traps or buggies in which their mothers are being driven, and in small towns you may often see a dozen or so mares standing in their buggies hitched up to posts waiting their masters' pleasure, while the colts play about the streets. The American driving horse is particularly reliable and docile. When only a few foals are bred on a farm, the colt can be handled from its infancy and trained to be docile and useful; a small establishment has, in this respect, an advantage over a large one.

ENVIRONMENT.

In considering the question of Environment, we at once approach a very practical part of horse breeding. With a scanty herbage and poor soil, one cannot grow a big horse. Foals from big parents placed in such a position will not fully develop; they will be smaller than their parents. One of two things has to be done. The natural food of a locality has to be supplemented, or a kind of horse suited to the district has to be bred. In England, if you supplement food, you can grow almost any breed of horse to its natural size, but this is not so in foreign countries, for in some places conditions of altitude, or of heat or cold, would always prevent a big breed of horses being produced. It is always necessary before fixing on an ideal type of horse which it is intended to try and breed, to study carefully the conditions of environment under which the process is to be carried out. If a district is suitable for pony breeding, it is better to try to breed a better class of pony than to attempt to breed Shires, especially if you know the conditions of soil and climate to be such that you can never get good ones. Most of us can call to mind instances where horse breeding on an elaborate scale has been started with breeds of horses unsuited to particular districts, and the results have been disappointing. Each breeder has to consider what class of horse his own district will naturally produce, for though he may often improve the breed, he will find it difficult to alter it completely.

REMOUNTS.

Horse breeding, owing to the recent demand for Remounts, has had a great impetus given to it, and, both in England and foreign countries, thought and consideration are being devoted to the breeding of suitable horses. The English farmer, instead of trying to breed Remounts, should rather endeavour to breed a horse of greater market value, and he will then find that he

has many suitable for Remounts. - As I have pointed out elsewhere, those who have cheap land abroad can always undersell us with inferior horses. Where the English farmer has the advantage is that he can produce the best, and it will pay him best to give thought to that point.

WHAT IS DEMANDED.

The demand in the towns, in the case of cart-horses, is for a big, strong, sound, and perfectly broken animal. When it lacks any of these qualities the price falls, because it has to compete with foreign-bred horses. If it is one of the lighter breeds, it must be good-looking, sound, and have perfect manners. The majority of people are ever ready to pay well for manners in a horse. The middleman or dealer's profit lies in many cases in his being able to recognise in the crude article a horse which, when it has acquired manners, will be valuable.

SOUNDNESS.

So much has been said and written on the necessity for using only sound animals to breed from that I will not labour that point here. We must, however, bear in mind that a horse that is unsound at once depreciates in value. A cart-horse which, if sound, may make 100*l.*, may only make 30*l.* or 40*l.* if he has side-bones. A hunter worth 250*l.*, if sound, may, if a roarer, only be worth 25*l.* We must take it for granted that only sound animals are used for breeding. You may by chance breed sound animals from unsound parents, but it is running a great risk to try and do so; and if you have an unsound animal, it is often better to take the first loss and get rid of it.

SUMMARY.

What I have tried to suggest by these notes is:—

That pedigree in its broadest sense should receive more consideration on a farm than it generally gets.

That in England we have a good chance of training our horses and manning them, and have an advantage in that respect over foreigners.

That in each district our ideal should be carefully subjected to the possibilities of the land, and that we should not try to breed the impossible.

That with the advantage of a market close to us, we should aim at producing the animal that is most saleable.

That where the best is wanted, the competition is almost



BARNEY COW "OTA MANCHA GOLFETTA" (P. S. 2286).
CATTLE FLOCKING OF MOUNTAIN CATTLE ASSOCIATION, CALIFORNIA, CALIFORNIA

limited to our own islands, and we each have a fair chance of success.

That it is better to breed a few foals on a farm where there is a good deal of other work going on than to try to breed horses as a distinct and separate business.

VI.—*Kerry and Dexter Cattle.* By F. A. HORDERN, Secretary of the English Kerry and Dexter Cattle Society.

A FEW years ago the Kerry and Dexter breeds of cattle were hardly known outside their native island, but owing, in a great measure, to the foresight of the late Mr. James Robertson, of La Mancha, Malahide, near Dublin—who saw that they only required to be introduced into England for their merits to be recognised there—they have now taken their place as one of the standing breeds of the country, numbers of them being kept in all parts of the kingdom, and many going abroad.

The breeds are very ancient, and are said to be nearly akin to the aboriginal wild cattle of England.

The two illustrations accompanying this article represent a Kerry cow and a Dexter cow. Both of the animals represented have won prizes at the principal Shows, and are considered by good judges to be typical specimens of the breed.

The Kerries and Dexters have deservedly become very popular in England, as probably no cattle give so much milk and butter at such little cost, and they will thrive on poor pasture where another breed could hardly be expected to live. They are consequently kept at considerably less expense than the ordinary breeds, while their docility and gentleness, as well as handsome appearance, are important factors in their popularity.

It is curious and interesting to note that, though they are now sought after for the park and home-field of many a mansion, they should have earned their earlier fame as the "poor man's cow." As they yield, for their size, abundance of milk of good quality, fatten readily when required, and are both hardy and economical to keep, they are not undeserving of their original title.

Both the Kerries and Dexters are especially adapted to small holdings, where, say, two cows of a larger breed are kept, as, in such a case, three, if not four, of these useful little animals can well be maintained on the same land. They have a naturally strong constitution, and being exceedingly

hardy, are able to resist the roughest weather; in fact, on their native island they will be found on the hillside where they exist with little food or shelter other than that afforded by the heath and the overhanging rocks.

The two breeds are quite distinct, the Kerry being rather of the Jersey type, while the Dexter has more resemblance to a miniature Shorthorn.

I am often asked which is the best milker, the Kerry or the Dexter? My experience is that they are both equally good, and the choice is merely a matter of fancy.

The average quantity of milk-yield per animal is from twelve to thirteen quarts daily, but many instances have been recorded where up to twenty quarts have been given, and even this quantity has been exceeded.

The following particulars of what these cattle have accomplished in competition with other breeds will help to show their capabilities.

In 1888, at the Royal Counties' Show held at Bournemouth, a Kerry cow named "Morna," which had the Reserve number in the milking trials, gave more butter in proportion to the quantity of milk than the first or second prize cows. The quantities given were as follows:—

First Prize—a Shorthorn: 4 gallons 2 pints of milk, 1 lb. 3½ ozs. butter.

Second Prize—a Jersey: 3 gallons of milk, 1 lb. 4 ozs. butter.

Reserve and V. H. C.—a Kerry: 2 gallons of milk, 1 lb. 1½ ozs. butter.

While it was under competition the Kerry received the green food only supplied by the Society, and no artificial food of any kind.

In the Carcase Competition, at the Smithfield Club Show in 1900, the Duchess of Newcastle won second prize with a pure Kerry heifer, which was placed before an Aberdeen Angus and Sussex Cross-bred and a Shorthorn and Galloway Cross-bred, and was beaten by only a few points by an Aberdeen Angus belonging to Her late Majesty.

At the same Society's Show in 1901, His Majesty the King won first prize with a very neat Dexter, in ripe condition, weighing 9 cwt. 1 qr. 1 lb. This animal was also awarded the 10l. Silver Cup as the best animal in the Kerry, Dexter, Shetland and Small Cross-bred cattle classes.

At the Dairy Show at Islington in 1901, the Kerries and Dexters came out very creditably, the Duchess of Newcastle's Kerry cow "Killarney" making 85·7 points and Mr. Joseph Thorley's Dexter cow, "La Mancha Bonny Lass," 86·7, thereby exceeding the standard of 75 points imposed in the Conditions.

The breeds have not been established in England long



DENTER COW—"LA MANCHA LOVE LOST" (F. S. 32).
(THE PROPERTY OF MR. H. DE BERTODANO, COWBRIDGE HOUSE, MALMESBURY.)

[To face page 76.]

enough for many owners to have kept a true milk register, but several are now doing so, and this enables them to weed out inferior milkers as well as to dispose of their cows to better advantage. We may, therefore, hope to have better data in the future than in the past to go upon.

Kerries and Dexters readily cross with other breeds, notably with the Shorthorn. An instance of this can be seen at Straffan, co. Kildare, where the outcome of a series of experiments carried on for many years by the late Major Barton, was practically a new and distinct variety. The Kerries have also been successfully crossed with the Polled Angus and Jersey breeds, the latter cross being especially good for milking purposes.

In 1892, the English Kerry and Dexter Cattle Society was instituted for promoting the interests of the breed. A few years after the establishment of the Society it was brought to its notice that the entry of English cattle in the Royal Dublin Society's Herd Book was attended by difficulty and expense to breeders in this country. Hence, it was decided by the English Society to publish a separate Herd Book in England, and the first volume, containing the creditable number of 447 entries, was issued in 1900.

VII.—*Nature-Study*. By JOHN C. MEDD, M.A.

EDUCATIONAL questions in themselves rarely appeal to the agricultural world. The effort, however, to make some study of nature a feature common to every school is an exception. In one of its aspects it seeks to lay the foundation upon which the whole science of agriculture must be built. While it is perfectly true that the art of farming can only be learned by and through the farm, it is no less true that the deeper the knowledge of nature and the more trained the powers of observation, the greater the likelihood of success. The taste for such knowledge can be most easily acquired in childhood, when the mind is pliable, and the desire to investigate its surroundings is a child's leading characteristic. The importance of familiarising everyone with the simple facts of garden, field, and hedgerow is no new discovery. Every serious thinker has insisted upon it for the past century. A generation ago Matthew Arnold wrote that "We are all coming to be agreed that an entire ignorance of the system of nature is as gross a

defect in our children's education as not to know that there was such a person as Charles the First." But in spite of the universal conviction that all education should be brought into closer contact with the realities of life, progress has been slow. Many causes have contributed to this. Until 1900 the restricted character of the code, and the system of payment by results, deterred teachers in elementary schools from qualifying themselves for, and from introducing subjects unlikely to increase the school income. Nor until recently have facilities for becoming qualified been open to them. In secondary schools the value of nature-study, as a mental discipline, quite apart from its service as a branch of science, has not yet met with the recognition which it deserves. Still, in isolated schools of varying grades, much useful work has been quietly going on for many years, notably at the Bootham School, York. It has, however, been comparatively unknown, and each school has had little in the way of advice or encouragement from outside. It seemed, therefore, that the time had arrived when an opportunity should be afforded by some central exhibition for illustrating methods of instruction and collating individual experience, with the view of ascertaining what is practicable and expedient in teaching nature-knowledge.

The success of the Exhibition in London last July exceeded the most sanguine expectations. County councils, university, agricultural and training colleges, secondary and primary schools, readily accepted the invitation to co-operate, and exhibits also came from Canada, Australia, and the United States. No better evidence of the intense interest in the movement could be desired. The quantity of material sent was more than the large space provided by the Royal Botanic Society could conveniently accommodate. Since this was the first occasion upon which a similar exhibition had been held in any country, it was inevitable that some of the exhibits might not be strictly classed as nature-study. It had been considered advisable to allow teachers the widest latitude in selecting what to send, the object being to ascertain the lines upon which each was proceeding, and, in so far as there might be error, correct it by the examples of others and the expressed opinions of the judges. At the same time it was felt to be unwise to attempt any definition of nature-study. The subject should be as free and unfettered as Nature herself, depending for its exact form upon local circumstances. To confine it within prescribed limits or to stereotype particular methods would destroy its vitality. It is really immaterial whether the study be based upon the life of plants, insects, or animals, upon geology, or upon any kindred subject, provided the teacher is

an enthusiast, understands what he is talking about, and chooses that branch which is most appropriate to his environment and resources. Nor can modes of instruction be determined in advance. They must necessarily vary according to the grade and aim of each school, and the facilities which each town or rural district may furnish. These facts should not be overlooked, for there is a tendency in certain quarters to engage in an endless discussion over what does or does not constitute nature-study, and to exclude everything which does not conform to some arbitrary standard. We have to be careful lest the faddist become master of the situation. The ultimate purpose of the promoters of the exhibition was to give an impetus to a definite reform in all education, and without any thought of disparaging literary culture, to emphasise by a sort of central object-lesson the importance of other than purely literary studies for the full development of the faculties of every child. Books alone leave untouched the powers of observation: they do little to stimulate the spirit of inquiry or to provoke an intelligent interest in the living world: their influence at school lies mainly in the region of memory. Accuracy of hand and eye, and correctness of judgment, which depends upon accurate observation, are the first conditions of a successful career in any industrial or commercial pursuit. This applies equally to every class in the community, and a system of education, which neglects to promote those necessary qualities, fails of its true object, and tends to become a dull mechanical process, wearisome to all who have to submit to it.

It is not easy to summarise the lessons to be learnt from the exhibition. Nature-study has many functions to fulfil. In primary and secondary schools its mission is principally educational, to train the mind, the eye, and the hand, and to serve as an introduction to the study of science as such. In continuation and agricultural schools the aim is technical and utilitarian. It is important to maintain these distinctions, lest it should be imagined that some highly specialised form of instruction were advocated for the former schools, where it would be altogether mischievous and out of place. The lessons should be directed as much as possible towards *living* objects to trace the life-histories of plant, animal, or insect. As it has been feared that the scholars might be led to do irreparable harm by the wanton destruction of rare plants or birds for their school museum, it cannot be too strongly insisted upon that collecting for the sake of collecting is worthless, and one of the results to be looked for from nature-study is a greater reverence for all living things. The proper way in which to study a

plant or an insect is in its living state. This may easily be done by cultivating a few plants in boxes or pots, or by watching the development of insects in breeding-cages. Simple experiments may also be performed, the apparatus for which can be inexpensively constructed out of the most ordinary material without any special skill in handicraft, as was abundantly shown at the London Exhibition by the Wye Agricultural College, Lady Warwick's School at Bigods, and two or three elementary schools. Neither teacher nor pupil must rely upon text-books. Again and again the late Professor Huxley stated that, if instruction in the elements of natural and physical science were to be mere book-work, it would be wiser not to attempt it. "Unless what is taught," he said, "is based on actual observation and familiarity with facts, it is better left alone." Every one is aware how much the teaching of botany has suffered hitherto from this defect.

There has been a tendency at some of the recent nature-study exhibitions to show work, in which neither teachers nor pupils have had any share. This is a mistake, and it might be well at future exhibitions to confine the exhibits to what has actually been prepared, on the one hand by teachers, and, on the other, by pupils, a careful distinction being maintained between the two. The effort to stimulate teachers to become really qualified for the required instruction may be rendered fruitless, if they are at all encouraged to depend upon ready-made bought collections, diagrams, models, &c.

The improvement which the introduction of nature-study into village schools will effect is perhaps the most important consideration for agriculturists generally. The difficulty of finding men capable of engaging in the more skilled branches of farm work, such as hedging, ditching, thatching, rick-building, and sheep-shearing, increases every year. The *intelligence* of the average labourer is at the lowest ebb, and the "handy" man has become almost as extinct as the dodo. Men of fifty, who never passed through the elementary school, as it has been for the past thirty years, are far handier and more efficient than their successors. The school, instead of sharpening their wits, has acted in an opposite direction. Its life and lessons have been wholly unrelated to the life which awaits them. Its only permanent effect has been to create a distaste for rural surroundings, and the desire to escape from them. It has been well said that man has a great deal of curiosity, but very bad eyes. The first business then of nature-study is to teach the child to open his eyes and how to use them. There are no subjects in which children naturally take a keener interest than those supplied by Nature, and they may be

presented to them in an infinite variety of ways. The instruction may be given partly in school, partly through country walks, and partly by the cultivation of flowers and vegetables in gardens attached to the schools. Plants and flowers should be studied objectively, and their structure explained. Their life and habits should be illustrated from plants grown in bottles, pots, and boxes, in water, sand, sterile or fertile soil. The effects on growth of light, air, warmth and moisture should also be demonstrated. Lessons should in every case be appropriate to the season of the year. Children so trained will have acquired habits of careful and accurate observation, which will be invaluable to them, whatever their future careers may be. Excellent examples of successful schemes of this type may be seen at the Chiselhurst Road Board School, Orpington, the Bunbury School, Tarporley, the Wye Village School, Kent, and elsewhere. No one can visit one of these schools without realising how much may be done for the improvement of village education. It is only necessary to bring this work to the notice of the public to convince everyone of the value of nature-study, not merely in making country life an object of ever-increasing interest, but in its direct influence in the whole of a child's mental development. Some objection has been raised to the encouragement of school gardens. It is feared that the gardens from being badly cultivated may do more harm than good, and it is asserted that in those countries where they have been for long in use, no appreciable benefit has resulted to the labour of the district. This fear is groundless. It has never been suggested that any but a properly qualified teacher should undertake school-gardening, and instances are to be found in every county where the school gardens are models of careful cultivation, and a source of pride both to the lads and their parents. The garden, it should be remembered, is intended to supplement and illustrate the other lessons in nature-study, and there ought to be complete co-ordination between the work done in school and out of school. Gardening by itself, detached from the rest of the curriculum, is not to be encouraged. A lad may learn how to dig and plant potatoes equally well, if not better, on his father's allotment. *The object of the school garden is entirely different.* It is to teach something of the principles which underlie all agriculture, to enforce by ocular demonstration the lessons of the class-room, to inculcate appreciation of the results which follow from right methods in all work upon the land, and to accustom the child to the exercise of intelligence in the treatment of the soil. The habits formed there will be a life-long possession. Nor is it correct to assert that no advantage has accrued from these gardens in other

countries. To take one case only:—in those parts of France where *Phylloxera* was most prevalent, the reconstitution of the vine has in a large measure been frequently brought about through the experiments of village schoolmasters in their school gardens, thanks to the horticultural knowledge acquired at their respective training colleges. Throughout the country it is a common occurrence for farmers and small cultivators to consult the schoolmaster upon plant-diseases and the ravages of insects, profiting by the object-lesson which his garden supplies. Though the farmer or labourer may be opposed to all reform and progress, when addressed simply in the name of science, he is ready enough to learn when practice is added to theory, and he can examine definite results with his own eyes. It goes without saying that the teacher must have a thorough practical and theoretical training. The entire movement may be wrecked if the present enthusiasm for nature-study should lead inexperienced people to attempt what they are incapable of carrying out. It is better to advance with caution and only where success is assured. Happily the facilities for teachers to obtain adequate knowledge at their training colleges or through the classes of the County Councils are rapidly increasing. Where satisfactory arrangements can be made, the County Councils would probably be well advised to provide in each county continuous courses of instruction on Saturdays throughout the year at some agricultural or horticultural institution. This plan appears preferable to that of short courses of a fortnight's duration in the summer holidays. The interval from Saturday to Saturday gives the teacher the opportunity of studying the subject-matter of each lesson for himself, and guards against the risk, incidental to the short courses, of his having accumulated a mass of undigested information. Pending a supply of qualified teachers the Local Education authorities might with advantage group a few conveniently situated schools, as suggested in the new Act, and engage special peripatetic teachers for nature-study in each school. These teachers would also be available for continuation school instruction, which is the necessary complement to what has been taught in the day school. Provision should be made for lads to proceed without a break from the garden of the day school to that of the continuation school, where the work would be of a more technical character. So far as the writer is aware, there are at present only two villages in which both these gardens are in operation. Their success is unmistakable. Lads remain longer at the day school that they may enter the gardening class, which is limited to fourteen pupils: they are then eager to join the continuation class, on leaving which they

are sure of obtaining more remunerative employment. A little organisation alone is required to enable every village to enjoy similar opportunities.

Since the exhibition in London many local exhibitions and conferences have been held, testifying to a genuine desire to turn the experience gained there to profitable account. For the future local committees can do no more in spreading the movement than any central association. In particular shows the various agricultural societies can render good service in this respect, and the proposal to hold a Nature-Study Exhibition in connection with the Bristol Show of the Bath and West and Southern Counties' Society ought to do much to promote the object in view. Anything calculated to improve the rural districts, whether through education or otherwise, is a matter of immediate concern to every farmer, and the annual shows of the Society can more effectually than any independent exhibition bring this new departure before those most directly interested.

At the same time it should not be forgotten that elsewhere the organisation of agricultural education, which includes the remodelling of the village school, was officially undertaken in response to the urgent demands of the agriculturists themselves. With us the relationship of the school to the farm has been too long overlooked. Nothing in France has stimulated teachers more than the prizes offered by agricultural societies and the *Syndicats Agricoles* for the best descriptive accounts of their respective communes. The teachers are invited to furnish particulars as to the system of land tenure, the size of the holdings, the character of the crops and the soil, the rates of wages, the rent of houses and land, together with other details bearing upon the social and economic condition of the people. This induces the teacher to acquire a vast amount of information which cannot fail to be of service to him in his profession, and it also provides the Societies with a number of very valuable statistics. There does not seem to be any reason why this example should not be followed in England. Something of the kind was tried in Hampshire two years ago with encouraging results.

VIII.—*Some Essentials of Successful Dairying.*
By Professor C. G. FREER THONGER, M.R.A.C., F.C.S.

THE DAIRYMAN.

THE most important factor in dairying is the dairyman. If he possesses the qualifications necessary to make the business a success, he will see that the other essentials are not wanting. He should have a good business education, be careful and methodical in his habits, with a determination to do everything pertaining to his work to the best of his ability. He should be not only capable, but thoroughly in earnest, and should take an interest in and appreciate every individual cow that is in his charge. Unless he sees clearly the necessity of kindness, good warm housing, pure drinking-water, knowledge of suitable feeding-mixtures, cleanliness in every particular, and is willing to devote time to weighing, testing, and recording the yield of his cows, it would be better for him not to attempt dairying, for it is extremely improbable that it will prove a paying business.

The successful dairyman of to-day is a very different man to the dairyman of the past. He does not imagine that he knows everything, and he is ever on the look-out for fresh ideas.

Dairymen may be divided into three classes: First, there are the workers who, by every means in their power, are striving to make the finest and best goods, and who are never content, but are incessantly trying to do better. This class of worker is anxious and willing to learn from every one and any one. Such a man will tell you that the more he knows about his work the more he wants to know, and the more he realises his own ignorance.

The next class includes those who seem to think that if they only make butter or cheese that will, by "hook or crook," pass the inspection of the buyer, they have done well enough and have reached the top of the ladder. Some day they will wake up and find that they are being left behind in the race, and they will wonder why it is so, and blame everybody but themselves. If you criticise their product, and try to bring home to them the fact that the fault is with themselves, they will tell you that their butter and cheese sells at market price, which is sufficient for them. But they forget or ignore the fact that, if their produce were equal to the best, the price they would then get would be correspondingly higher. They do not seem to realise that there is a wide range in quality from the finest down to the point where the weeding-out commences.

Few words need be used to describe the third class of workers. It consists of those, who, utterly ignorant and shiftless, do not seem to care what the result of their labour will be. You may know them by their work and surroundings before you see them.

A man or woman must possess no ordinary amount of ability and intelligence to become a first-class butter or cheese maker, and those who are so may well feel proud of their position. While there are scores of makers who can never attain to this, there are many others who, if they would only wake up and get abreast of the times, would soon be in advance of the majority.

THE DAIRY COW.

The best dairy cow is that which will produce the greatest amount of milk of good quality from a given quantity of food. The difficulty is to decide what cow most nearly conforms to this definition. It is, however, certain that an approach to this ideal cow can be found in every breed.

In breeding, there are three chief factors—selection, heredity, and environment. Selection means the choosing of animals approaching, as nearly as possible, to the type we wish to produce. Heredity is the tendency which all organic things have to resemble ancestors. Broadly taken, it includes atavism—the throwing back, or reversion to ancestors more or less remote—and prepotency, or the ability to transmit certain characteristics to the offspring. This latter is the power of some individuals especially, and is, probably, greatly strengthened by in-breeding, and by long breeding upon certain lines. The great foundation Shorthorn bull, “Favourite,” is an oft quoted example of an animal possessing this power to a remarkable degree.

Men have long recognised the influence of selection and heredity; but since Darwin pointed out the power which animals and plants have of adapting themselves to the conditions which surround them, we have come to realise much more the part played by environment.

Environment means general surroundings, kind and quantity of food, climate, and, in fact, the daily life of the animal. Hence the future of a calf depends very much upon the treatment it receives for the first two years of its life.

In Nature's breeding, environment has done almost everything. The primitive horse, which went down into the low marshy country of the lower Rhine, where he never lacked food, and there was no struggle for existence, after many centuries became the powerful, big-footed, large-boned Flemish horse.

The primitive horse, which went to Western Asia, where the climate was dry and food not too plentiful, and where everything demanded a different type of animal, became as the result of its environment the small, active, swift, and hot-blooded Arab.

The Dutch cow, since the time of the Roman conquest has dwelt in the Friesland marshes, the most luxuriant in the world. There, where water was always close at hand, where to get her food she need hardly move about, where, when she took a bite of grass, she got a whole mouthful, she fitted herself to her environment. Food was abundant, so she grew big, her bone, as she had no hills to climb, became fine, and she never had to "rustle" for her living. So she is to this day a big, easy-loving, sleepy cow, capable, under suitable conditions, of wonderful results.

It is difficult for any one to entirely avoid partisanship in breeds. Perhaps it is best for a man to choose the breed which he fancies; but it is folly to expect success with any breed, unless, to some extent, the same conditions as those under which it has been developed are provided. We must seek after the cow that will give us the greatest amount of rich milk for a given amount of food, and most of us would retain any cow that, with good care, would give 300 lbs. of butter per year. Some of these may be found among all breeds.

With the beef breeds we are not concerned. This is a day of specialisation, and there is something incompatible between a thick loin and a thigh, together with the ability to lay on fat freely at an early age, and the capability to give milk largely and persistently. To attempt to combine these is as fallacious as to try and combine the thoroughbred and the Shire horse. The dairy cow is a wonderful production in her way, and her breeding and management, and the manufacture of her produce, represent one of the highest phases of agriculture.

The purchasing of cows in the open market is, as we have frequently pointed out, a decidedly unsatisfactory business; but as a large number of the renewals of the herd are obtained in this manner, the points which the dairy cow should possess may now be considered.

Many persons who claim to have a pretty good idea of what a dairy animal should be, still adhere to the old notion that it should be deep in the flanks, and wedge-shaped, increasing in depth and width backwards. So far as mature cows are concerned there may be something in this, if we add depth of udder; but we have to consider points that are applicable to the young calf, the undeveloped heifer, and the sire as well.

Many good cows lack depth of flank, nor are all heifers of

great promise and bulls noted as great sires specially remarkable for deep flanks; indeed, the reverse is generally the case. A deep flank is generally accompanied by a level or straight bottom line, so desirable in beef animals; but a promising dairy youngster is invariably deep in the middle, with the bottom line from the middle running upwards to the brisket, and towards the flank, which shows good depth through the middle of the body, but the reverse behind the shoulders and in front of the hips. Putting aside all immaterial points, we have two things to consider. First, what disposition will the animal make of its food? and second, how much food will it consume in a day? Its angularity or tendency to smoothness will decide the first point, and its depth of middle the second. Having these two points settled, it matters little whether she gives much or little milk. For if she does not convert food into meat, she must convert it into milk. If she gives little milk, she will make up in a larger percentage of fat and other solids what is lacking in quantity. If she gives a large flow, it simply means that she assimilates more water with her milk, and yields a smaller percentage of fat and other solids.

With regard to the second point, if we take two cows similarly built as to angularity, except that one shows greater depth through the middle than the other, both being about the same size, they will require an equal amount of food for support, say 8 lbs. of digestible nutritive matter. The deep cow will eat and digest 16 lbs. of digestible nutritives, using 8 lbs. as food for support, and 8 lbs. for conversion into dairy products. In other words, you have a half interest in all the food she eats; you are an equal partner in the business. The cow that lacks depth through the middle will eat about 12 lbs. of digestible nutritives per day, using 8 lbs. for herself as food for support, and 4 lbs. she converts into dairy products, in which case you have only a third interest in the food she takes. This is the reason why some cows lacking digestive capacity, but having otherwise good dairy points, give such a poor return in the dairy.

The disposition an animal will make of the food it takes is mainly a question of temperament. Animals, as well as men, are dominated by different temperaments, and vary in form or type accordingly; consequently type is the index of temperament. In the hound, hunter, thoroughbred, &c., the motor or muscular system, having the mastery, absorbs the bulk of the nutritive material in their food. In this class of animal there is always a large network of veins, running over and through the muscles, to carry the nutritive matter absorbed by the blood to these parts. Whether it be the pig, the compact blocky bullock, or the mutton sheep, the vital temperament

holds sway, and the nutritives in the food are converted into flesh. With the dairy cow, the function of motherhood is the chief object in life, and this is accomplished through the most wonderful of all systems—the nervous. Conception itself is the result of nervous action, and though shrouded in mystery, the fact that gestation and motherhood are mainly the result of nervous action is clearly demonstrated through the whole period of lactation. The more highly developed the nervous system, the greater the activity of the lacteal functions, and the greater the flow of blood to the udder. The udders of great milkers are always covered with a correspondingly large network of veins, and the two veins running forward from the udder in such cows are of a size to accommodate the large flow of blood from the udder. The more closely we examine this intricate problem, the more clearly do we see that temperament really controls the disposition of the nutritive material taken up by the blood; and since type is simply an index of temperament, we must train ourselves to a better study of animal physiology.

CARE OF THE COWS.

Cultivate the acquaintance of your cows, treat them kindly, and teach them to regard you as their best friend; cows love kind treatment, and we may rest assured that it will pay. In making the change from winter feeding to pasture, great care should be used. Do not be in too great a hurry to get the cows out to grass; wait until the grass gets a fair start, and the ground becomes warmed up, so that the cows will not be chilled when lying down. Garget and other udder troubles are often traceable to this cause. Keep up the winter feeding for some time, reducing it gradually as the grass improves, and the cows will not then have the half-starved appearance they frequently have at this season. It will pay to give the cows a "bait," when brought up for milking, as they will then be near at hand, which will save time in driving them up. When the grass begins to fail, have ready on hand some green maize, cabbages, vetches, or something extra to keep up the flow of milk. Keep salt always within their reach, and provide abundance of pure water. If butter-making be followed, make a good quantity in winter, for with cows well taken care of, and with a good dairyman at the head of affairs, it will pay well. Have a number of cows fresh in the autumn, being very careful as soon as the nights become chilly and during cold rains to house them for cold cows and success do not go together. As soon as frost and snow sets in, keep them in all the time, except on

warm, sunshiny days, when they can be let out for a few hours without harm. Grow plenty of roots, and have a good supply of bran, cake, maize-meal, and ground oats. These, with well-made early-cut hay, will provide a good range of milk-producing foods. Feed liberally, but not blindly. Note the capacity of each cow, and feed accordingly, for some will be found able to pay better for feeding than others. In order to ascertain this, weigh each cow's produce, then by calculating what the food costs, it is a very easy matter to know whether you are feeding at a profit or a loss. This may be some little trouble, but it is the only sure way. It will tell us the quantity of milk the cow gives; while, in order to ascertain the quality, the milk of each animal should be tested at least once a month, or, better, every fortnight. Do not depend upon the amount of butter obtained from a certain quantity of milk, for you may lose a considerable percentage of butter-fat in creaming and churning, and so condemn the cow wrongfully. If, after a fair trial, you find you have cows that do not pay, sell them, and the sooner the better.

Keep the houses clean, and the cows well bedded, brush them every day, and do not allow a particle of manure to be left on them. Milk them at regular times, and let each milker milk the same cows each time. The cows should be carefully brushed before milking, and the hands of the milker kept perfectly dry during the process. Allow no loud talking or other noise during milking time. Cows coming fresh in the autumn and well fed, will give a good flow of milk all winter, and on getting out to grass in spring will give nearly as much as though fresh in the month of March.

HANDLING THE PRODUCE.

Although this part of the subject comes last it is by no means of the least importance; indeed, upon it hinges the financial success of the dairyman's business. A good deal depends on how you dispose of your produce; but whether engaged in either the retail milk trade, cheese manufacture, or butter-making, offer nothing for sale unless it be of the best.

If butter is made, use tin pails for milking, and be very careful to thoroughly scald and clean them. Do not let them stand in the cow-house after being filled, but carry them to the dairy at once. Strain the milk into the setting-pan or separator. Keep the cream holder in a cool place, and stir up every time you add fresh cream. When you have sufficient to churn, or at least every three days, place the cream holder in a warm room, and stir occasionally, so that its contents may ripen evenly. As soon as the cream assumes a thickened velvety appearance, it

is ready to churn, and should be churned in summer at 58° to 60°, and in winter at 63° to 65°. Do not fill your churn too full; one-third full is about right. Turn at about forty-five revolutions a minute, not forgetting to ventilate the churn a few times when commencing. If everything is all right, in about thirty minutes the glass will become clear. Then churn slowly, until the granules of butter are distinct, and about the size of wheat-kernels. Add cold water, so that the granules will harden slightly, and then draw off the butter-milk. Wash until the water runs from the churn perfectly clear. Salt with the best salt to be obtained, and to suit the taste of your market; make up the butter into neat packages, wrapping each one in a sheet of parchment-paper. If the above directions are carried out, you will seldom have any trouble with unruly churnings, and will have an article which will always sell and at a good price.

IX.—*Report upon the Society's Trials as to the Churnability of Cream and its relation to various Breeds of Cattle.* By ERNEST MATHEWS.

AT the Meeting of the Bath and West and Southern Counties Society at Croydon in 1901, trials to ascertain the churnability of cream were undertaken for the first time, and a Report thereon subsequently appeared in the Society's 'Journal' for the year 1901-2.

In a note upon the subject in the same volume,* the Associate Editor said :—

"The subject needs investigation, and is one far from easy to investigate," and he subsequently describes the work as being "wanting in precision, there being far too many undetermined quantities in the results."

When the Council of the Society sanctioned similar trials at the 1902 (Plymouth) Meeting, no pains were spared by all the workers to make them successful. It is believed that more light has been thrown on the subject, while the opinions hazarded in the previous experiments have, at the same time, been in many particulars corroborated.

The trials were carried out on the same lines as last year, but as microscopical work was introduced for the first time, and, further, as the buttermilk samples were not satisfactory last year, a short account of this year's procedure may be given.

The breeds selected for the trials were the Shorthorn,

Jersey, Guernsey, and South Devon. The milks were taken on Tuesday evening, May 27th, 1902, for the ripened-cream trials, and on Wednesday morning for the sweet-cream trials.

The milks of each breed were kept in separate churns and were weighed, the weight of each lot being recorded.

Samples of the milks were taken by me for analysis by Dr. Voelcker.

The milks were then heated up to a uniform temperature of 100° Fahr., and were passed through a steam turbine "Alpha Laval" separator, which was run at a uniform speed throughout.

Samples of the separated milk were taken for Dr. Voelcker, and also samples of the cream and separated milks for Sir C. T. D. Acland for microscopical purposes.

The creams were all separately weighed, the Tuesday's creams being placed in a room set apart for the purpose, and stirred frequently until required for use on the Thursday morning.

The sweet cream of the Wednesday morning was, within an hour of separating, divided into the various lots and churned.

The creams in both trials were divided into three lots and were churned at the following temperatures: 54° Fahr., 58° Fahr., 62° Fahr., the churns and creams being alike brought to these temperatures.

The butter of each lot as it came was passed through a "Delaiteuse," and made up on the butter worker by the same person throughout.

The buttermilks, after standing a few hours, were run through the separator, the resulting cream (when found) being cooled down to 54° Fahr. and churned, the second lot of butter being placed alongside that obtained from the first churning.

A sample of the buttermilk from each churning was taken by me for analysis by Dr. Voelcker, the buttermilk having been previously weighed.

The buttermilks were then churned a second time, and samples obtained from the second churning were also taken for analysis.

The cream for the ripened cream trials was taken from the Tuesday evening's milk, and can hardly be considered normal in the case of the Shorthorns, Jerseys, and Guernseys, as many of these cows had been previously in the Show-ring, their milk being thus a secretion of from six to eight hours only.

The morning's milk might be considered almost normal, as the cattle had the whole night to rest in; the evening milks as usual were found to be rather richer than those of the morning.

The South Devon milk appeared to be normal throughout, the cattle apparently having been milked at the usual hour on the Tuesday morning.

The following Tables show the composition of the morning and evening milk used and also of the separated milk obtained :—

ANALYSIS OF MILKS.

	SHORTHORN.		JERSEY.		GUERNSEY.		SOUTH DEVON.	
	Morning.	Evening.	Morning.	Evening.	Morning.	Evening.	Morning.	Evening.
Fat	per cent. 3·45	per cent. 4·76	per cent. 4·20	per cent. 6·30	per cent. 3·90	per cent. 6·45	per cent. 4·40	per cent. 4·55
Solids not Fat .. }	9·11	8·65	9·27	9·05	9·30	8·82	9·32	9·22
Total Solids	12·56	13·41	13·47	15·35	13·20	15·27	13·72	13·77

These figures show the abnormal richness of three of the evening milks, and also the good quality of the milks as a whole.

ANALYSIS OF SEPARATED MILKS.

	SHORTHORN.		JERSEY.		GUERNSEY.		SOUTH DEVON.	
	Morning.	Evening.	Morning.	Evening.	Morning.	Evening.	Morning.	Evening.
Fat	per cent. ·135	per cent. ·109	per cent. ·150	per cent. ·134	per cent. ·098	per cent. ·123	per cent. ·150	per cent. ·204
Solids not Fat .. }	9·24	9·17	9·35	9·89	9·30	9·37	9·24	9·60

The three following Tables give the comparison of the figures obtained in these trials with those obtained at Croydon in 1901 :—

NUMBER OF POUNDS OF MILK REQUIRED TO MAKE
1 LB. OF CREAM.

	Morning Milk.		Evening Milk.	
	1901.	1902.	1901.	1902.
	lbs.	lbs.	lbs.	lbs.
Shorthorn	5·20	6·8	4·06	7·23
Jersey	4·25	5·42	3·06	7·23
Guernsey	4·47	8·81	3·41	7·52
South Devon .. ..	..	5·20	..	5·70

NUMBER OF POUNDS OF CREAM REQUIRED TO MAKE
1 LB. OF BUTTER.

	Morning Milk.		Evening Milk.	
	1901.	1902.	1901.	1902.
Shorthorn	lbs. 6·42	lbs. 4·52	lbs. 6·26	lbs. 2·93
Jersey	4·25	3·82	4·54	2·03
Guernsey	5·83	2·69	4·12	1·92
South Devon .. ..	..	3·77	..	3·32

CALCULATED NUMBER OF POUNDS OF MILK REQUIRED TO MAKE
1 LB. OF BUTTER.

	Morning Milk.		Evening Milk.	
	1901.	1902.	1901.	1902.
Shorthorn	lbs. 33·38	lbs. 30·73	lbs. 25·41	lbs. 21·18
Jersey	18·06	20·70	13·89	14·82
Guernsey	26·06	23·69	14·04	14·43
South Devon .. ..	..	19·60	..	18·92

The number of pounds of milk required to make 1 lb. of butter in the butter-test trials and the churnability trials are given for the sake of comparison :—

	Churnability Trials.		Butter Test Trials.	
	1901.	1902.	1901.	1902.
Shorthorn	lbs. 29·39	lbs. 25·93	lbs. 29·40	lbs. 26·62
Jersey	16·40	17·76	17·53	20·36
Guernsey	20·54	19·06	22·42	20·53

The following Tables, which have been worked out on the same lines as in 1901, give the full details of the trials.

RECKONED FROM ANALYSIS.—SHORTHORN.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Weight of Milk.	Yield of Cream.	No. of lbs. of Milk to make 1 lb. of Cream.	Cream used.	Equal to Milk.	Percentage of Fat in Milk (Voelcker).	Lbs. of Fat in Milk taken.	Equal to Butter with 88 per cent. Fat.	Butter reduced to lbs. and ozs.	No. of Test.	Temperature of Cream and Churn.	Yield of Butter, 1st Churning.	Butter lost.	Butter regained, 2nd Churning.	Total Butter made.	Total Butter lost.	Total Butter excess.
lb. ozs.	lb. ozs.	lb.	lb.	lb.	per cent.	lb.	lb.	lb. ozs.		°Fahr.	lb. ozs.	ozs.	ozs.	lb. ozs.	ozs.	ozs.
UNRIPENED CREAM FROM MORNING'S MILK.																
102 0	15 0	6.8	5	34.0	3.45	1.17	1.36	1 12	1	54	0 15	68	1 1	1 0 1	5 1	...
									2	58	0 11 1	10 1	9 1	1 4 1	1 1	...
									3	62	0 8	13 1	8 1	1 0 1	5 1	...
RIPENED CREAM FROM EVENING'S MILK.																
76 0	10 8	7.23	3	21.69	4.76	1.03	1.19	1 3	1	54	1 0 1	2 1	..	1 0 1	2 1	...
									2	58	1 0	3	0 1	1 0 1	2 1	...
									3	62	0 13 1	3 1	1 1	1 0 1	2 1	...

RECKONED FROM ANALYSIS.—JERSEY.

UNRIPENED CREAM FROM MORNING'S MILK.																
153 14	28 6	5.42	5	27.10	4.20	1.13	1.31	1 5	1	54	1 2 1	2 1	3 1	1 6 1	..	1 1
									2	58	1 0	5	4 1	1 4 1	0 1	..
									3	62	0 13	8	6 1	1 3 1	1 1	..
RIPENED CREAM FROM EVENING'S MILK.																
101 4	14 0	7.23	3	21.69	6.30	1.36	1.58	1 9 1	1	54	1 7 1	2	..	1 7 1	2	..
									2	58	1 7 1	2	..	1 7 1	2	..
									3	62	1 7	2 1	0 1	1 7 1	1 1	..

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Weight of Milk.	Yield of Cream.	No. of lbs of Milk to make 1 lb. of Cream.	Equal Cream used to Milk.	Percentage of Fat in Milk. (Voelcker).	Lbs. of Fat in Milk taken.	Equal to Butter with 66 per cent. Fat.	Butter reduced to lbs. and ozs.	No. of Test.	Tempera- ture of Cream and Churn.	Yield of Butter, 1st Churning.	Butter lost.	Butter regained in Churning.	Total Butter made.	Total Butter lost.	Total Butter excess.	
lbs. ozs.	lbs. ozs.	lbs.	lbs.	per cent.	lbs.	lbs.	lbs. ozs.		°Fabr.	lbs. ozs.	ozs.	ozs.	lbs. ozs.	ozs.	ozs.	
UNRIPENED CREAM FROM MORNING'S MILK.																
178 10	18 0	8.81	5	44.05	3.90	1.71	1.98	1 15½	1	54	1 10	5½	5½	1 15½	2½	..
									2	58	1 7½	8½	6	1 13½	2½	..
									3	62	1 4	11½	8	1 12	3½	..
RIPENED CREAM FROM EVENING'S MILK.																
115 12	15 6	7.52	3	22.56	6.45	1.45	1.68	1 10½	1	54	1 8	2½	..	1 8	2½	..
									2	58	1 8½	2	0½	1 9½	1½	..
									3	62	1 7½	3	0½	1 8½	2½	..

RECKONED FROM ANALYSIS.—SOUTH DEVON.

UNRIPENED CREAM FROM MORNING'S MILK.																
122 4	23 8	5.20	5	26.00	4.40	1.14	1.32	1 5	54	1 1½	3½	3½	1 5½	..	0½	0½
								2	58	1 0½	4½	4½	1 5	..	..	..
								3	62	0 14	7	7	1 5	..	..	..
RIPENED CREAM FROM EVENING'S MILK.																
53 8	9 6	5.70	3	17.10	4.55	0.77	0.89	0 14½	54	0 14	0½	0½	0 14½	..	..	..
								2	58	0 19½	0½	0½	0 14½	..	..	..
								3	62	0 19½	0½	1	0 14½	..	..	..

* NOTE.—A quantity of buttermilk was spilt by the churner. The amount left in the churn was weighed, showing about 50 per cent. loss. I therefore doubled the butter when it came, putting the 8½ ozs. churned down as 7 ozs.

BUTTERMILK.—SHORTHORN.

No of T. ss.	Weight of Buttermilk from 1st Churning.	Fat Per- centage (Voelcker).	Lbs. of Fat in Butter- milk taken.	Equal to Butter with 86 per cent Fat.	Butter reduced to lbs. ozs.	Butter obtained and Churning.	Butter lost.	Butter in excess.
	lbs.	per cent.	lbs.	lbs.	lbs. ozs.	l ^{bs} . ozs.	lbs. ozs.	lbs. ozs.
UNRIPENED CREAM BUTTERMILK.								
Weight and Analysis of 2 ^o Buttermilk, all three lots put together:—								
	Weight.	Fat.						
	lbs. ozs.	per cent.						
1	4.25	8.33	.354	.411	0 6½	0 1½	0 5½	
2	5.0	9.63	.461	.586	0 8½	0 9½	..	0 0½
3	5.75	10.20	.586	.681	0 11	0 8½	0 2½	
RIPENED CREAM BUTTERMILK.								
Weight and Analysis of 2 ^o Butter- milk:—								
	Weight.	Fat.						
	lbs. ozs.	per cent.						
1	4.12	1.06	.043	.050	0 0½	..	0 0½	
2	4.0	1.28	.051	.059	0 1	0 0½	0 0½	
3	4.50	2.35	.105	.122	0 2	0 1½	0 0½	

BUTTERMILK.—JERSEY.

1	4.75	4.73	.224	.260	0 4½	0 3½	0 0½	
2	4.37	7.13	.311	.361	0 5½	0 4½	0 1	
3	6.12	7.67	.469	.545	0 8½	0 6½	0 2½	
1	3.63	.50	.018	.020	0 0½	..	0 0½	
2	4.37	.59	.025	.029	0 0½	..	0 0½	
3	4.50	1.11	.049	.056	0 0½	0 0½	0 0½	
UNRIPENED CREAM BUTTERMILK.								
Weight and Analysis of 2 ^o Butter- milk:—								
	Weight.	Fat.						
	lbs. ozs.	per cent.						
28	6 .. ..	.685						
RIPENED CREAM BUTTERMILK.								
Weight and Analysis of 2 ^o Butter- milk:—								
	Weight.	Fat.						
	lbs. ozs.	per cent.						
7	0 .. ..	.37						

BUUTERMILK.—(JERSEY).

ALL CREAM CHURNED AT 64°.		No. of Test.	Weight of Buttermilk from 1st Churning.	Fat per-centage (Voecker).	Lbs. of Fat in butter-milk taken.	Equal to Butter with 86 per cent. Fat.	Butter obtained and Churning.	Butter lost.	Butter in excess.
			lbs.	per cent.	lbs.	lbs. ozs.	lbs. ozs.	lbs. ozs.	lbs. ozs.
UNRIPENED CREAM BUTTERMILK.									
Weight and Analysis of 2° Butter-milk:—									
				Weight.	Fat.				
				lbs. ozs.	per cent.				
		1	4.0	8.36	.834	.338	0 5½	..	0 0½
		2	4.5	9.53	.431	.501	0 6	0 2	
		2	5.0	11.95	.597	.694	0 8	0 3	
RIPENED CREAM BUTTERMILK.									
Weight and Analysis of 2° Butter-milk:—									
				Weight.	Fat.				
				lbs. ozs.	per cent.				
		1	3.75	.67	.025	.029	0 0½	0 0½	
		2	3.5	.89	.031	.036	0 0½	0 0½	
		3	4.0	1.57	.062	.072	0 1½	0 0½	0 0½

BUTTERMILK.—SOUTH DEVON.

UNRIPENED CREAM BUTTERMILK.									
Weight and Analysis of 2 ^o Butter-milk:—									
		Weight.		Fat.					
		lbs. oz.		per cent.					
1	4.75	4.15	.197	.229	0 3 $\frac{1}{2}$	0 3 $\frac{1}{2}$	0 4 $\frac{1}{2}$	0 0 $\frac{1}{2}$	0 0 $\frac{1}{2}$
2	4.63	5.12	.239	.277	0 4 $\frac{1}{2}$	0 4 $\frac{1}{2}$	0 6 $\frac{1}{2}$	0 7	0 0 $\frac{1}{2}$
3	5.68	6.14	.348	.404	0 0 $\frac{1}{2}$	0 0 $\frac{1}{2}$	0 1	0 0 $\frac{1}{2}$	0 0 $\frac{1}{2}$
RIPENED CREAM BUTTERMILK.									
Weight and Analysis of 2 ^o Butter-milk:—									
		Weight.		Fat.					
		lbs. oz.		per cent.					
1	4.37	.80	.034	.039	0 0 $\frac{1}{2}$	0 0 $\frac{1}{2}$	0 0 $\frac{1}{2}$	0 0 $\frac{1}{2}$	0 0 $\frac{1}{2}$
2	4.5	1.14	.051	.059	0 1	0 0 $\frac{1}{2}$	0 1	0 0 $\frac{1}{2}$	0 0 $\frac{1}{2}$
3	4.5	1.76	.079	.091	0 1 $\frac{1}{2}$	0 1	0 1	0 0 $\frac{1}{2}$	0 0 $\frac{1}{2}$

Before comparing the results with the trials of last year, and seeing how far the opinions then expressed have been confirmed or otherwise, I would call attention to a peculiarity in the Guernsey milk which I have not noticed before.

Looking at the Tables on pages 86 and 87, it will be noticed that it took considerably more Guernsey milk to yield 1 lb. of cream than from any other breed; while, on the other hand, it took considerably less Guernsey cream to make 1 lb. of butter.

From this it would appear that while Guernsey milk is not quite so valuable as Jersey (the butter ratio of the latter being the better), Guernsey cream is, as cream, worth considerably more per gallon than Jersey cream.

This peculiarity, although very marked in the Guernsey milk in the present trial, is, however, common to the three breeds tested this year as compared with 1901, and it may be attributed to the greater flush of grass which has been continuous throughout the whole season.

I would also refer to the churning of the second lot of sweet cream of the Shorthorn milk.

Although the three lots of cream were all carefully weighed, it will be noticed that the first and third lots yielded very badly in comparison with the second lot, the principal loss occurring in the churning of the buttermilk of the first lot, which only produced $1\frac{1}{4}$ ozs., although, according to the analysis of the buttermilks, this lot should have produced $6\frac{1}{2}$ ozs.

The result of the trials, so far as the dairy work is concerned, strengthens the opinions hazarded in the Report of the trials at Croydon, which are repeated here:—

“First, that the churning of perfectly sweet cream results in considerable loss; the Shorthorn first, and the Guernsey next, being apparently the worst of the breeds tried.

“Second, the lower the temperature of churning the less the butter subsequently recovered from the buttermilk.

“Third, that the percentage of fat shown in a chemical analysis of milk is not a reliable guide to the weight of butter to be obtained.”

As mentioned above, more analyses were taken this year than last; the new milks and the buttermilks from both first and second churnings being all analysed by Dr. Voelcker in duplicate.

In addition to this a microscopical examination was made of the various creams and separated milks; these were most kindly arranged for by Sir C. T. D. Acland, and carried out by Mr. F. V. Dutton, the Agricultural Instructor to the Devon County Council.

Taking Dr. Voelcker's work first, his Report of the 12th June is as follows:—

"First, the separation was very good, the Guernsey being as good as any.

"Second, as the temperature of the churning is raised, so is there more butter-fat left in the buttermilk. This applies equally to the sweet cream and the ripened, and to all the breeds alike.

"Third, there is not nearly as much fat in the buttermilk with the ripened as with the sweet cream.

"This applies to all four breeds.

"Fourth, with sweet cream there appears to be more fat left in the buttermilk of the Guernsey and Shorthorn than with the Jersey and South Devon.

"With ripened cream the Shorthorn is the worst in this respect, while the Guernsey is but little inferior to the Jersey.

"Fifth, in the second churning with the sweet cream the Guernsey leaves more fat over than the others; the South Devon the least.

"With the ripened cream the South Devon leaves least fat, and the Guernsey rather less than the Shorthorn and Jersey."

It will be noticed that Dr. Voelcker's conclusions are in every case corroborated by the figures given in the Churning Table.

For the microscopical examinations undertaken by Sir C. T. D. Acland and Mr. Dutton, samples of the various creams and separated milks were taken by me and allowed to stand fifteen hours before they were examined.

The samples were placed in tightly corked bottles, to prevent dust and other material from getting in.

The Report by Mr. Dutton is as follows:—

"The method adopted for the comparison of the samples of cream used in the churnability tests, was to take a cubic centimeter of the cream, dilute it exactly one hundred times and place a small drop of this on a cover glass and examine it under a microscope with the aid of an eye-piece ruled in squares. The figures given are the number of globules seen in the field of view multiplied by 100 to allow for the dilution; about forty samples were taken of each, and the average result is recorded.

"As was to be expected, if the method was satisfactory, the samples of Guernsey and Jersey cream were nearly equal in respect of number of globules.

"The smallest number of globules was observed in the Devon cream and the largest number in the Shorthorn cream.

"The examination of the skim milk was made without any previous thinning.

"Judging from the number of globules in the skim milk, the separation was better in the Guernsey and Jersey milks, than in the milk from other breeds."

The following Table is appended to Mr. Dutton's Report:—

	Number of Globules in Field of Microscope.
Shorthorn Cream	1,200,000
Shorthorn Separated Milk	300
Guernsey Cream (many very large globules)	1,120,000
Guernsey Separated Milk	25
Jersey Cream	1,100,000
Jersey Separated Milk	26
Devon Cream	890,000
Devon Separated Milk (very small globules)..	400

In the report of the Croydon trials the opinion was hazarded that the creams from cattle which are credited with large and regular sized fat globules churn better than those which contain small and irregular sized ones, in both the sweet and the ripened stages.

Mr. F. J. Lloyd, in his article on the fat globules in milk in the last issued volume of the 'Journal' of the Society, says:—

"Even the mechanical separation does not appear to exercise sufficient power to prevent the smallest fat globules from remaining practically stationary in the skimmed milk. If the enormous power of a separator fails to overcome this tendency, is it not equally probable that the comparatively small force exerted in churning also fails to collect them? These observations lead me to think that the unchurnability of fat in certain milk is ultimately associated with—if not due to—the size of the fat globules. All the milk examined contained the minute fat globules. The chief difference between the various milks seemed to lie rather in the proportionate number of the small globules present."

The figures given in Mr. Dutton's Report, and the result of the trials this year, appear to bear out Mr. Lloyd's view. The small fat globules which were found in the Shorthorn and Devon separated milk, point to the probability that the smaller globules which remained in both these creams would not churn, while the absence of these very small globules from the Guernsey and Jersey milks accounts for their greater churnability in the ripened cream trials.

Mr. Dutton's Report does not give any account of the uniformity of the sizes of the fat globules in the various samples of cream.

The work that had to be done, and the short time available in which to do it, will account for the impossibility of giving more details on this point. But enough has been demonstrated

by these trials, and by Mr. Lloyd's microscopical examinations of last year, to show that the churnability of cream depends largely on the uniform size of the fat globules, the loss in the separation in the first place, and the inability of the small globules to yield up their fat in the churn, being apparently settled by the figures in the analytical and microscopical Tables.

Mention must be made of the milk of the South Devon cattle.

Like the Shorthorn cream in the unripened stage this cream does not churn well, although in the two churnings, both with sweet and ripened creams, apparently all the butter is recoverable: this may be accounted for by the times of milking.

The Shorthorn, Jersey, and Guernsey milks on the afternoon of Tuesday were only the secretion of a few hours, but the South Devon milk (from the analyses, which are confirmed by the dairy trials) was apparently milk taken after the usual milking interval had elapsed since the previous milking.

The analyses showing 4.40 lbs. fat in the morning and 4.55 lbs. in the evening milk, with a butter ratio of 19.60 lbs. and 18.92 lbs. respectively, indicate that the two milkings were at almost equal periods of twelve hours, which was not the case with the milks from the other breeds tested.

The analyses of the milk of the two Devon cows entered for the milking trials, which was taken at an interval of 13 and 11 hours, show a decided difference between the morning and evening milk as follows:—

	Morning Milk.	Evening Milk.
	lbs. fat.	lbs. fat.
No. 212	2.90	5.13
No. 620	3.20	4.28

Another interesting fact from Mr. Dutton's work deserves notice, although it is outside the subject matter of the Report.

He writes, "On the last day of the Show several samples of the butters from the churnability tests were tested by means of the Gerber butyrometer, with the following results":—

Butter from ripened Shorthorn Cream	12.3 per cent. water.
" " " Jersey Cream	13.0 " "
" " " South Devon Cream	13.0 " "
" " sweet Shorthorn Cream	23.0 " "
" " " Jersey Cream	18.0 " "
" " " Guernsey Cream	18.0 " "

These figures at the present time deserve attention. They

show what I have found on other occasions, that butter made from ripened cream can be worked better than from sweet cream, and that the percentage of water is correspondingly less.

The results of the trials of 1902 appear on the whole to strengthen the conclusions formed from those of 1901, and may be expressed as follows:—

(1) That milks containing small and irregular sized fat globules do not churn as well as those having larger and regular sized ones, the small fat globules being lost both in separation and in churning.

(2) That churning perfectly sweet cream results in considerable loss.

(3) That the loss of the small fat globules in separation, and in the first churning, accounts for the difference between the analytical and practical tests.

It is evident that in trials of this sort a good deal of work has to be done, and without willing and cheerful assistance they could not be carried out.

To Sir C. T. D. Acland and Mr. Dutton, who undertook the microscopical work, to Dr. Voelcker, who analysed the large number of samples, to Mr. Somerville, who acted as Steward, and to Miss Channon, and all those who worked in the Dairy, I would tender my sincere thanks.

X.—The Milk and Butter Test Classes at the Plymouth Exhibition. By DR. J. A. VOELCKER, M.A., F.I.C., and ERNEST MATHEWS.

MILK TEST CLASSES.

THE Society's Consulting Chemist (Dr. Voelcker) reported upon these classes as follows:—

“Twenty cows, out of the twenty-four entered, competed in the three milk-test classes. Three of these were entered in the special class for South Devon cows, and the remaining seventeen were divided into two classes according as their live weights, taken on Wednesday, May 28th, showed them to be over or under 900 lbs. live weight.

“Under this arrangement, the ‘light weight’ class was composed of two Guernsey and eight Jersey cows.

“Of the seven cows in the ‘heavier’ class, one was a South Devon, one a South Devon and Guernsey cross, two were Lincoln Red Shorthorns, one a Shorthorn, and two were Jerseys.

“For the purposes of the trial, the cows were all milked dry at 5 P.M. on Wednesday, May 28th, and the competitive milkings

were taken at 7 A.M. and 5 P.M. on Thursday, May 29th, when the milk was weighed and sampled for analysis.

"The requirements of the test were that the milk should, on the average of the two competitive milkings, yield 12 per cent. of total solids, of which not less than 3·25 per cent. should be fat, the period of lactation being taken into consideration.

"In Class 105, the first prize went to Dr. Watney's Jersey, 'Marryatts Lass,' she being well ahead of the others, with 47·4 points. Having calved as far back as January, she had an allowance of 9·4 points.

"The second prize went to Mr. Horswell's Guernsey cow, 'White Socks,' to which the still larger allowance of 10·2 points was made.

"The third prize was awarded to Sir T. V. S. Gooch's Jersey cow, 'Wild Rose,' which gave the largest quantity of milk, but having only recently calved she received no allowance with regard to the period of lactation.

"It may be remarked that the first prize winner, 'Marryatts Lass,' was the oldest cow of those competing in this class, she being over eight years old. In 1894 she obtained the first prize in the butter-test competition at the Society's Show at Exeter, and, as will be seen later, she took the first prize and silver medal in the butter-test competition at the present Show.

"In Class 106, a very high yield of milk was given by the first prize winner, Mr. J. Evens' Lincoln Red Shorthorn cow, 'Burton Ruby Spot,' aged 5½ years. She gave, in the two milkings, 67 lbs. 6 ozs. of milk. In her morning's milk the standard of fat was not reached, but the evening's milk, being rich as well as large in amount, the conditions as regards the average of the two milkings were fulfilled.

"The second prize winner was Mr. H. Cundy's South Devon cow, 'Favourite,' with 57·75 points against the 67·98 points of the winner.

"The third prize went to a Jersey cow, Dr. Watney's 'Red Maple,' with 53·50 points.

"In no case did the cows fail in either of the classes to come up to the requirements of the trial as regards quality of milk.

"The competition in Class 107, limited to South Devon cows, the property of a *bonâ fide* tenant farmer residing in Devon or Cornwall, was a disappointing one. Only three cows competed, and none of these did really well, or indeed as well as the Jersey cow, 'Red Maple,' that obtained the third prize in Class 106. The winner was Messrs. R. Cundy and Sons' cow, 'Dairy Maid.'

"The particulars of analysis, &c., are given in the following Table:—

MILK TEST CLASSES.

Class.	No.	Owner and Cow.	Breed.	Live Weight.	Age.	Number of Days in Milk.
105 (Cows under 900 lbs. live weight.)	420	Mr. J. Brutton's "Maud" ..	Jersey	790	4½	58
	434	Miss Standish's "Electro" ..	"	878	4½	69
	435	Miss Standish's "Opal"	"	712	4	56
	436	{ Miss Standish's "St. Helier's" Princess" }	"	842	6	52
	446	{ Sir T. V. S. Gooch's "Wild Rose" }	"	740	3	..
	468	{ Sir T. V. S. Gooch's "Catina" }	"	684	2½	115
	534	{ Col. H. W. Shakerley's "Maid" of Calais" }	Guernsey	856	6½	85
	610	{ Mr. G. W. Horswell's "White" Socks" }	"	818	..	142
	612	{ Dr. H. Watney's "Marryatts" Lassie" }	Jersey	886	4½	101
	613	{ Dr. H. Watney's "Marryatts" Lass" }	"	882	8½	134
106 (Cows 900 lbs. live weight and over.)	615	Mr. H. Cundy's "Favourite" ..	S. Devon	..	..	164
	619	{ Lord Rothschild's "Darlington" Crauford 3rd" }	Shorthorn	..	7	61
	611	Mrs. C. McIntosh's "Fairy" ..	Jersey	976	6	147
	614	Dr. H. Watney's "Red Maple"	"	1002	5½	160
	616	{ Mr. J. Evens' "Burton C. Star" 2nd" }	{ Lincoln Red }	..	6	46
	617	{ Mr. J. Evens' "Burton Ruby" Spot" }	"	..	5½	46
	618	Mr. G. W. Horswell's "Bangle"	{ Guernsey and S. Devon cross. }	1214	14½	98
107 (S. Devon cows.)	212	Messrs. Gloyne & Sons' "Ju Ju"	S. Devon	..	3½	111
	216	Mr. W. Merry's "Lovely" ..	"	..	4	63
	620	{ Messrs. R. Cundy & Sons' "Dairy" Maid" .. .. . }	"	..	..	90

MILK TEST CLASSES.

Quantity of Milk.			Quality of Milk.				No. of Points for Milk.	No. of Points for Lactation.	Total No. of Points.	Awards.
Morn- ing.	Even- ing.	Total.	Morning.		Evening.					
			Fat.	Solids.	Fat.	Solids.				
lbs. ozs.	lbs. ozs.	lbs. ozs.	Per cent.		Per cent.					
18 4	15 0	33 4	4.37	13.98	5.85	15.70	33.25	1.80	35.05	
17 10	13 12	31 6	4.00	13.56	5.10	14.78	31.33	2.90	34.28	
21 0	16 2	37 2	3.80	13.32	4.68	14.20	37.12	1.60	38.72	
21 4	17 2	38 6	3.25	12.51	4.47	13.68	38.38	1.20	39.58	
24 0	19 4	43 4	3.90	13.13	5.93	15.26	43.25	..	43.25	3rd Prize.
13 0	9 4	22 4	5.15	14.47	6.15	15.30	22.25	7.50	29.75	
20 2	17 8	37 10	4.28	13.50	4.10	13.26	37.62	4.50	42.12	
20 6	13 13	34 3	4.55	14.03	5.50	15.30	34.19	10.20	44.39	2nd Prize.
16 2	12 8	28 10	5.20	14.40	6.38	15.49	28.62	6.10	34.72	
22 3	15 13	38 0	4.90	13.93	5.83	15.10	38.0	9.40	47.40	1st Prize.
26 2	19 10	45 12	3.45	12.50	5.03	14.29	45.75	12.00	57.75	2nd Prize.
27 12	22 15	50 11	2.70	12.11	3.90	13.52	50.63	2.10	52.79	
16 6	14 0	30 6	4.35	13.50	5.45	14.63	30.38	10.70	41.08	
23 4	18 4	41 8	4.45	14.13	5.50	15.33	41.50	12.00	53.50	3rd Prize.
28 12	21 1	49 13	3.13	12.39	4.70	13.70	49.81	.60	50.41	
36 6	31 0	67 6	2.83	11.86	4.63	13.57	67.38	.60	67.98	1st Prize.
19 0	14 6	33 6	4.10	13.40	4.10	13.44	33.38	5.80	39.18	
15 0	16 5	31 5	2.90	12.40	5.13	14.38	31.31	7.10	38.41	
8 10	7 4	15 14	6.13	15.82	5.47	14.97	15.88	2.30	18.18	
22 0	19 0	41 0	3.20	12.53	4.28	13.53	41.0	5.00	46.00	1st Prize.

BUTTER TEST CLASSES.

The English Jersey Cattle Society offered prizes for cows of any breed or cross, obtaining the greatest number of points by the practical test of the separator and churn, judged by the scale of points adopted by that Society.

There were two classes, one for animals under 900 lbs. live weight, and the other for animals of 900 lbs. live weight and over.

The prizes in each class were, first, 10*l.*; second, 3*l.*; third, 2*l.* In addition, gold, silver, and bronze medals were offered for the three Jersey cows, entered or eligible for entry in the English Jersey Herd Book, obtaining the greatest number of points in the test, as well as a special prize of 1*l.* for the best quality of butter produced by any Jersey cow awarded a medal, prize, or certificate of merit in the test.

The Judge (Mr. Ernest Mathews) reported as follows :—

“ Out of an entry of nineteen cattle, fifteen arrived in the Showyard to compete for the prizes offered. Of these animals four weighed over 900 lbs., the remainder forming the light-weight class. The breeds represented were Jerseys and Lincoln Red Shorthorns.

“ The cattle were stripped at 5.10 P.M. on Wednesday evening, the 28th May, the milk for the next twenty-four hours being taken for the test.

“ The milks were separated on Thursday evening, churning commencing on Friday morning at 9.12 A.M., the awards being published by 4 P.M.

“ The higher standard of points,* which came into force in 1902, excluded some of the Jersey cattle from obtaining the Certificates of Merit which in other years they would have received. Full particulars of the test will be found in the Table on page 101.

“ The averages are as follows :—

Number.	Days in Milk.	Milk Yield.	Butter Yield.	Ratio.	Points.
		lbs. oz.	lbs. oz.	lbs.	
13 Jerseys	110	34·0	1·11	20·05	34·00
2 Lincoln Reds	46	58·9½	2·3½	26·62	36·10

“ The arrangements made by the Society were excellent, and to the Stewards—Colonel Llewellyn, M.P., and Mr. A. F. Somerville—and Miss Channon, who superintended the dairy work, my thanks are especially due.”

* Certificates of Merit were awarded to every Jersey cow over five years old obtaining 35 points, or if under that age 30 points. The points formerly were 32 and 28 respectively.

CHURNING TABLE.

CHURNING TABLE.																							
No. in Catalogue.	Exhibitor.	Name of Cow.	Breed.	Live Weight.	Date of Birth.	Date of last Calf.	Days in Milk.	Milk Yield.	Butter Yield.	Butter Ratio.*	Colour and Quality of Butter.	Points for Butter.	Points for Lactation.	Total Points.	Awards. For Scale of Points by which the prizes were awarded, see footnote on page 100.	Time.			Temperature.				
																Began.	Finished.	Duration.	Dairy.	Cream and Churn.	Butter Milk.		
																						a. m.	a. m.
613	Dr. H. Watney	{Marryatts Lass, x. 289}	Jersey	882	Nov. 5, '93	Jan. 15, '02	134 38	0 2	3 17	12	V. Good	35 50	6 40	44 90	{1st, 10¢, and silver medal}	10 55	11 25	30	58	52	57		
634	E. Smith ..	{Neatness, xiii. 320}	"	680	Mar. 24, '98	Oct. 27, '01	214 28	2 1	61	20	22	Pale	22 26	12 00	34 25	11 25	11 58	33	58	52	53		
446	{Sir T. V. S. Gooch}	{Wild Rose, xiii. 369}	"	740	May 12, '99	Apr. 26, '02	33 43	4 2	4	19	22	Fair	38 00	—	36 00	10 28	10 46	18	58	53	53		
419	{Mrs. Loader Brown}	{Remember, Imp.}	"	764	July 30, '97	Mar. 14, '02	76 36	12 1	11 1	15	56	Go. d	27 50	3 60	31 10	Certificate of merit	9 12	10 6	54	55	52	53	
612	Dr. H. Watney	{Marryatts Lassie, xi. 286}	"	886	Feb. 2, '98	Feb. 17, '02	101 28	10 1	11 8	16	50	V. Good	27 75	6 10	33 85	Certificate of merit	10 45	11 14	29	58	52	56	
425	A. Gibbs ..	{Lass of Jersey 2nd viii. 220}	"	896	Apr. 18, '93	Apr. 5, '02	54 39	14 1	11 1	22	99	Good	27 75	1 40	29 15	9 34	10 2	28	55	53	52		
431	Miss Scandish	{Electra, Imp.}	"	878	Oct. 20, '97	Mar. 21, '02	69 31	6 1	7	21	82	Good	23 00	2 30	25 90	9 48	10 24	36	57	52	54		
435	Miss Scandish	{Opal, Imp.}	"	712	1898	Apr. 3, '02	56 37	2 1	8	24	00	Good	24 75	1 60	26 35	10 15	10 50	35	58	52	54		
436	Miss Scandish	{St. Heller's Princess, xiii. 343}	"	842	1896	Apr. 7, '02	52 38	6 1	9	24	56	Good	25 00	1 20	26 20	10 20	10 50	30	58	52	54		
463	{Sir T. V. S. Gooch}	{Cathrina, xii. 96}	"	684	Jan. 18, '00	Feb. 3, '02	115 22	4 1	5	16	95	Pale	21 00	7 50	28 50	10 35	10 50	15	58	52	54		
622	{Bishop of Ips- wich}	{Vervain's Lady, xi. 341}	"	796	May 10, '97	Feb. 24, '02	94 36	6 1	5	26	75	Fair	21 75	5 40	27 15	11 22	12 23	61	58	52	58		
CLASS 110.—COWS OF ART BREED OR CROSS, 900 LBS. LIVE WEIGHT AND OVER.																							
614	I. R. H. Watney	Red Maple, x. 320 ..	Jersey	1002	July 14, '96	Dec. 20, '01	160 41	8 2	34	18	83	V. Good	35 25	12 00	47 25	{1st, 10¢, & gold med. (and 1¢ butter prize)}	11	2 11	34	58	52	55	
617	J. Evans ..	Burton Ruby Spot ..	{Lincoln Red}	—	Sep. 10, '96	Apr. 13, '02	46 67	6 2	10 1	25	51	V. Pale	Bad	42 25	0 60	42 85	2nd Prize, 3¢ ..	11	29	12	58	52	55
611	Mrs. McIntosh	Fairy, xi. 241	Jersey	976	Mar. 5, '96	Jan. 2, '02	147 30	6 1	8	20	25	Good	24 00	10 70	34 70	10	40	10	58	52	55	
616	J. Evans ..	Burton C. Star 2nd ..	{Lincoln Red}	—	Mar. 18, '96	Apr. 13, '02	46 49	13 1	12 1	27	73	Pale	Good	28 75	0 60	29 35	11	9	11	58	52	56

CLASS 110.—COWS OF ANY BREED OR CROSS, 900 LBS. LIVE WEIGHT AND OVER.

614	Ir. H. Watney	{Red Maple, x. 320}	Jersey	1002	July 14, '96	Dec. 20, '01	160 41	8 2	34	18	83	V. Good	35 25	12 00	47 25	{1st, 10¢ & gold med. (and 1¢ butter prize)}	11 21	11 34	32	58	52	55
617	J. Evans ..	{Burton Ruby Spot}	{Lincoln Red}	—	Sep. 10, '96	Apr. 13, '02	46 67	6 2	10 1	25	51	V. Pale	42 25	0 60	42 85	2nd Prize, 3¢	11 29	12 30	61	58	52	55
611	Mrs. McIntosh	{Fair, xi. 241}	Jersey	976	Mar. 5, '96	Jan. 2, '02	147 30	6 1	8	20	25	Good	24 00	10 70	34 70	.. .. .	10 40	10 55	15	58	52	55
616	J. Evans ..	{Burton C. Star 2nd}	{Lincoln Red}	—	Mar. 16, '96	Apr. 13, '02	46 40	13 1	12 1	27	75	Pale	28 75	0 60	29 35	.. .. .	11 9	11 26	19	58	52	56

* The "Butter ratio" represents the number of lbs of milk required to make 1 lb. of butter. Ten lbs. of milk are reckoned as equal to an Imperial gallon.

CLASS 111.—COWS OF THE GUERNSEY BREED.

No. In Catalogue.	Exhibitor.	Name of Cow.	Live Weight.	Date of Birth.	Date of last Calf.	Number of Days in Milk.	Milk Yield.				Butter Yield.			
							Morning.		Evening.	Total.				
							lbs.	oz.				lbs.	oz.	
525	Mrs. Fownes	Princess Rhea	510	Dec. 20, '95	April 30	29	26	14	17	1	43	15	2	44
526	Mrs. Fownes	First Love	510	.. ..	March 5	85	17	12	13	8	31	4	1	84
527	E. A. Hambro	Express	510	Mar. 26, '95	May 11	18	18	14	12	0	30	14	1	15½
528	E. A. Hambro	Hayes Rosie	510	Dec. 15, '95	April 18	41	32	8	20	11	53	3	2	10½
531	S. Mitchell..	Pretty Dairymaid	510	Sept. 24, '95	April 6	53	17	10	13	13	31	7	1	10½
534	Col. Shakerley	Maid of Calais	510	Feb. 12, '95	March 5	85	20	2	17	8	37	10	1	10
553	W. Maddick	Miss Evelyn	510	Feb. 1, '00	March 30	60	17	8	14	0	31	8	0	15½

CHURNING TABLE.

No. in Catalogue.	Name of Cow.	Ratio, viz. lbs. Milk to lbs. Butter.	Colour and Quality of Butter.		No. of Points for Lactation.	No. of Points for Butter.	Total No. of Points.	Awards.	Time.			Temperature.		
			Colour.	Quality.					Churning Began.	Churning Finished.	Duration of Churning.	Dairy.	Cream and Churn.	Butter-milk when churning finished.
									a.m.	a.m.	min.	deg.	deg.	deg.
525	Princess Rheas	19 26	V. Good	Good	36-50	36-50	36-50	Silver medal and 11.	9 3	9 50	47	55	52	52
526	First Love	20 40	V. Good	Good	4-50	24-50	29-00	.. ..	9 7	9 42	35	55	52	52
527	Express	15 80	V. Good	Good	31-25	31-25	31-25	Bronze medal and 11.	9 5	9 28	18	55	52	52
528	Hayes Rosie	19 90	V. Good	Good	42-75	0-10	43-85	Silver cup	9 4	9 37	33	55	52	52
531	Pretty Dairymaid	19 16	V. Good	Good	26-25	1-30	27-55	.. ..	9 9	9 52	43	55	52	54
534	Maid of Calais	23 15	V. Good	Good	26-00	4-50	30-50	.. ..	9 10	9 56	46	55	52	53
553	Miss Evelyn	33 04	Fair	Fair	15-25	2-00	17-25	.. ..	9 10	9 55	45	55	52	54

Lot 527, 528, 553, the butter-milk was churned a second time, and the butter added to the first weight. E. M.

The English Guernsey Cattle Society offered prizes for English-bred cows or heifers, entered, or eligible for entry, in the Society's Herd Book, obtaining the greatest number of points by the practical test of the churn, the points to be reckoned on the weight of butter, and an allowance for lactation to be made under the scale settled by the English Guernsey Society.

The Judge (Mr. Ernest Mathews) reported as follows:—

"Seven animals competed, and they were stripped at 5.10 P.M. on Wednesday evening, the 28th May, the milk of the next twenty-four hours being taken for the test.

"The Table opposite gives the full results of the trials which were carried out on precisely the same lines as on previous occasions, and at the same time as the open butter test trials.

"In three instances the butter-milk required a second churning, a characteristic rather peculiar to the Guernsey breed.

"The cow that won the silver cup was an exceptionally good Guernsey, combining good looks with quality and quantity of milk."

XI.—The Society's 1902 Exhibition of Cider.

By FRED. G. FARWELL, Steward.

THE number of entries of cider at the Plymouth Exhibition in 1902 was 65 as against 53 at Croydon in 1901, and 96 at Bath in 1900. This was decidedly disappointing, for Plymouth is in a well-known cider district.

The entries in the various classes were as follows:—

CIDER MADE IN DEVON.

Class.	Not less than 4 per cent. of alcohol.	Entries.	Class.	Less than 4 per cent. of alcohol.	Entries.
167.—Cask of Cider	3		169.—Cask of Cider	2	
168.—12 Bottles of Cider ..	1		170.—12 Bottles of Cider ..	4	

CIDER MADE IN HEREFORDSHIRE.

171.—Cask of Cider	1	173.—Cask of Cider	1
172.—12 Bottles of Cider ..	1	174.—12 Bottles of Cider ..	4

CIDER MADE IN SOMERSET.

175.—Cask of Cider	9	177.—Cask of Cider	9
176.—12 Bottles of Cider ..	12	178.—12 Bottles of Cider ..	11

CIDER MADE IN OTHER COUNTIES.

179.—Cask of Cider	1	181.—Cask of Cider	1
180.—12 Bottles of Cider ..	2	182.—12 Bottles of Cider ..	3

	30		35
Total entries containing not less than 4 per cent. of alcohol ..	30		
" " less than 4 per cent. of alcohol			35
			65

In accordance with the usual conditions, all exhibits had to be delivered into the Showyard ten days before the judging day; the cases were then unpacked and both bottles and casks placed in position. There were no absentees. On Saturday, May 17th, a sample from each exhibit was taken and forwarded, in special bottles sent for the purpose, to Mr. F. J. Lloyd, F.C.S., for analysis. Particulars of these analyses were received from Mr. Lloyd on Monday, May 26th, and are given in Appendix A. Out of the 65 exhibits 12 were disqualified; 5 for having less than 4 per cent. of alcohol in classes where 4 per cent. was the minimum, 6 for having more than 4 per cent. when that standard was the maximum, and 1 for containing preservatives.

Mr. J. H. Hill, of Newtake, Staverton, near Totnes, was the Judge appointed by the Society, being the same gentleman who acted as Judge at the Society's Exhibition at Exeter in 1899, and the judging took place on the first day of the Show.

In the Devon classes for cider containing not less than 4 per cent. of alcohol, Mr. Haydon had a "walk over" in the class for cider in cask, the two other competitors being disqualified, owing to their cider having in one case only 2.65 per cent. and in the other 2.90 per cent. of alcohol, while in the class for cider in bottle, Mr. Haydon, who was awarded a first prize, made the only entry. In the classes for cider containing less than 4 per cent. of alcohol, Mr. Haydon was again successful, carrying off the first prize in each class, Mr. Came taking a second in the class for cider in bottle.

In the Herefordshire classes for cider containing not less than 4 per cent. of alcohol, Mr. Mailes, the only exhibitor, was unfortunate, as he was disqualified in each class—his ciders containing only 2.90 and 2.85 per cent. of alcohol instead of 4 per cent. In the classes for cider containing less than 4 per cent. Mr. Bazley took a first for the only exhibit in cask and a second in the class for cider in bottle—the first prize in this latter class going to Messrs. Yeomans.

The Somerset classes were again the chief feature of interest in the Show, there being 9 exhibits in each of the classes for cider in cask and 12 in each of those for bottled cider. In the class for cider in cask containing not less than 4 per cent. of alcohol, Messrs. D. J. Crofts and Son took both first and second prizes; Mr. H. Tucker being reserved and very highly commended, and Mr. W. T. S. Tilley highly commended.

In the class for bottled cider Messrs. Crofts and Son were awarded the first prize and Mr. W. T. S. Tilley the second.

Messrs. Crofts and Sons were very highly commended and reserved, Mr. H. Tucker was very highly commended, and Mr. W. T. S. Tilley and Messrs. C. Osborn and Son were highly commended.

For cider in cask containing less than 4 per cent. of alcohol, Messrs. D. J. Crofts and Son were awarded the first prize, and Mr. H. J. Davis the second; while in the class for bottled cider, Mr. H. J. Davis had first and second prizes, and Messrs. D. J. Crofts and Son were highly commended.

In the classes open to other counties, the Judge gave the first and second prizes to Messrs. Rout and Son for cider in bottle, and a second to the same firm for cider in cask containing over 4 per cent. of alcohol. The first prize went to Mr. H. Thomson for cider in bottle containing under 4 per cent., and the second to Mr. C. Knight, who was also awarded a second for the only entry for cider in cask in the same section.

All the exhibits, twelve in number, to which the Judge had awarded first prizes, had again to compete for the Champion Gold Medal, which was ultimately won by Messrs. D. J. Crofts and Son for their cider in bottle containing over 4 per cent. of alcohol, the Reserve No. going to Mr. H. J. Davis for his cider in bottle containing less than 4 per cent. of alcohol. It will thus be seen that the Championship again fell to Somerset. Messrs. Croft's cider was made from equal quantities of Royals, White Jerseys, Red Streaks, Cadburys, and Corton Pippins, the analyses of these apples being as follows:—

—	Average Weight of Apple.	Per-centage of Juice.	Sp. Gr.	Total Solids.	Acid.	Grape Sugar.	Cane Sugar.	Tannin.
Royal Jersey ..	3·1	69	1·0692	17·46	·27	14·92	1·47	·406
White Jersey ..	2·0	65	1·0603	14·86	·25	11·11	2·22	·190
Red Streaks ..	2·4	61	1·0672	16·80	·41	14·28	·64	·476
Cadburys	4·0	72	1·0703	17·54	·42	15·87	1·08	·354
Corton Pippin ..	3·9	58	1·0593	14·84	·32	12·82	·33	·214

The average acidity of these five apples works out at 0·33, as compared with 0·34 in Mr. Spurway's cider of the previous year, which then gained the Gold Medal. The cider which was reserved was made of equal quantities of Red and White Jerseys and Harry Masters, with one-eighth of Kingston Blacks.

In commenting upon the exhibition of cider as a whole, one cannot but be struck by the extraordinary difference in the quality of different years, showing how much the season or weather

has to do with a good or bad year in precisely the same way as it affects the wine vintage abroad. 1901-2 was doubtless a curious and troublesome year for cider-makers, as, owing probably to the ripeness of the fruit and the high gravity of the juice, fermentation was very slow, and I should not be at all surprised to find that in many cases a further fermentation has taken place after the cider has been bottled. It is much to be regretted that the classes for cider made in Devon did not fill better, for cider has for centuries held an important and distinguished place among the products of the soil of that county. In the introductory remarks to a new edition, printed in 1811, of Risden's "Survey of Devon," mention is made that two hundred years ago cider was in such plenty "as many copyholders may pay their Lords' rent with their cider only. This is probably the case in some parts and some seasons even now, though the orchards are neither as large or productive or so numerous as they used to be. The cider tax operated to reduce the number of apple trees, thousands of which were cut down at the time it was imposed, and the produce of the remainder is probably lessened by a variety of causes, among the principal of which are the unfitness of old orchard ground to the growth of fresh trees and the known gradual decay of some of the best varieties of apples." This is very true and equally applicable to the present time. Of the first introduction of cider into Devon there seems to be no record, but it is generally considered that the monks first introduced the apple and the manufacture of cider. I believe that in Domesday there is no mention of orchards, but there is some record that in 1286 cider was drunk by labourers on the Manor of Axmouth. It is singular that a Norman Knight, Ralph de la Pomerai, whose name signifies an apple orchard, should have had bestowed on him, by William the Conqueror, a manor near Totnes, now known by the name of Berry Pomeroy.

The county of Hereford was unfortunately represented by 7 exhibits only; but in this case the distance from Plymouth may be well taken as an excuse.

Somerset cider-makers were well represented, and the Judge was particularly struck with the excellence and uniformity of all the exhibits from that county, which gave him a great deal more trouble in judging than all the others.

On the second and third day of the Show many persons interested in the cider industry availed themselves of the privilege afforded by the Society and tasted the various exhibits. It was amusing sometimes to hear the comments of Devon men upon the merits of the Champion cider—they utterly failed to understand how a Devon man could possibly give the

gold medal to a cider which they considered as only fit for women and children. A Devon man naturally considers Somerset cider as too sweet; but Devon and Somerset are not comparable, inasmuch as the best of Somerset apples only come from a comparatively small area, although good cider can be made over a large area. One Devon man, after expressing himself strongly over the iniquity of the Judge in giving the premiership to Somerset, was offered by the Steward a Devon cider with something like .90 of acidity in it, and at once exclaimed, "Now, that is what I call cider. Just the stuff I like about five o'clock in the morning if I have had too much gin and water the night before! Why, it just cuts the phlegm!" This is a typical case, showing how little tenant farmers still realise that they must make for the public taste and not for their own fancy.

A meeting of cider makers, mainly consisting of tenant farmers from Somerset, was held in the cider shed during the Show, at which Mr. Lloyd and Mr. Neville Grenville were present. Nothing is more encouraging than the keenness on all sides to learn from Mr. Lloyd and Mr. Grenville the results of their experiments; indeed, if we could only have told them all they wanted to know we should have been *facile princeps* in the art ourselves, whereas we are only on the threshold. An amusing incident must not be forgotten. Some one suggested that there would not be half-a-dozen of the persons then present who would agree as to which was the best cider in the Show. A bottle was taken from No. 30 (the Champion), No. 52 and No. 53 (the Reserve Champion). The numbers were removed from the bottles and fresh marks substituted. Five gentlemen, Messrs. Lloyd, McCreeth, Tilley, Eittle and Caddick, gave the award to No. 30; three gentlemen, Messrs. Neville Grenville, Farwell and Eldred G. F. Walker, to No. 52; and one, Mr. Croft, to No. 53—a singular confirmation that the Judge was right.

In concluding this Report, it must be mentioned that Mr. Hanbury, the President of the Board of Agriculture, accompanied by his secretary, Sir Thomas Elliott, again honoured the cider department with a visit. He tasted many of the exhibits and listened with great interest to the many points which were brought under his notice at the Exhibition—the practical result of his visit being the suggestion to establish a Cider Experiment Station in some convenient and accessible centre, and this is now under serious discussion. Whatever may be done in the future, it is to be hoped that the cider-makers of the West will ever remember with gratitude the earnest endeavours made by Mr. Neville Grenville to improve the

108 FARWELL on the Society's 1902 Exhibition of Cider.

manufacture of cider, for it was through his foresight and generosity that the experiments were first started and have been carried on up to the present time with so much success at Butleigh.

APPENDIX A.—ANALYSES.

Class.	No.	Name of Exhibitor.	Specific Gravity at 60° F.	Alcohol by Volume.	Acidity.	Solids per cent.	Award.
167	1	C. Haydon	1·0150	5·80	·50	5·28	1st Prize.
	2	Mann & Son	1·0330	2·65	·80	8·79	
	3	H. T. Palk	1·0317	2·90	·56	8·57	
168	4	C. Haydon	1·0150	5·55	·55	5·20	1st Prize.
169	5	J. M. Came & Son ..	1·0334	2·80	·60	10·27	1st Prize.
	6	C. Haydon	1·0270	3·96	·47	7·76	
170	7	Bowden & Coombe ..	1·0370	2·50	·64	9·80	R. & V. H. C.
	8	J. M. Came & Son ..	1·0430	1·30	·55	11·17	2nd Prize.
	9	C. Haydon	1·0270	3·55	·53	7·77	1st Prize.
	10	Mann & Son	1·0390	2·65	·90	10·40	
171	11	F. R. Mailes	1·0390	2·90	·52	10·52	1st Prize.
172	12	F. R. Mailes	1·0270	2·85	·40	7·57	
173	13	J. Bazley	1·0350	2·85	·46	9·42	
174	14	J. Bazley	1·0304	3·85	·65	8·59	2nd Prize.
	15	J. Bazley	1·0293	3·40	·49	8·51	
175	16	Yeomans Bros.	1·0384	1·85	·88	9·92	1st Prize.
	17	Yeomans Bros.	1·0344	2·60	·60	9·16	
	18	W. T. Allen	1·0328	3·55	·29	9·18	
	19	Mrs. B. Chiffers ..	1·0187	4·80	·52	5·86	1st Prize.
	20	D. J. Crofts & Son ..	1·0256	4·80	·36	7·70	
	21	D. J. Crofts & Son ..	1·0216	5·90	·41	6·91	2nd Prize.
	22	H. J. Davis	1·0294	4·15	·41	8·43	
	23	C. Osborn & Son ..	1·0174	6·00	·44	5·97	H. C.
	24	W. T. S. Tilley ..	1·0284	5·70	·28	8·73	
	25	H. Tucker	1·0274	5·00	·33	8·19	R. & V. H. C.
176	26	E. Wellington ..	1·0184	6·10	·33	6·26	C.
	27	W. T. Allen	1·0324	4·10	·34	9·22	
	28	Mrs. B. Chiffers ..	1·0196	4·55	·40	6·02	R.
	29	D. J. Crofts & Son ..	1·0257	4·70	·50	7·71	
	30	D. J. Crofts & Son ..	1·0256	4·70	·37	7·68	1st Prize and Champion.
	31	H. J. Davis	1·0284	4·90	·40	8·43	C.
	32	H. J. Davis	1·0184	5·65	·39	6·10	
	33	C. Osborn & Son ..	1·0194	5·90	·49	6·41	H. C.
	34	C. Osborn & Son ..	1·0173	6·50	·40	6·10	
	35	W. T. S. Tilley ..	1·0283	6·15	·29	8·88	2nd Prize.
177	36	W. T. S. Tilley ..	1·0275	5·20	·36	8·31	
	37	W. T. S. Tilley ..	1·0273	5·70	·30	8·45	H. C.
	38	H. Tucker	1·0304	4·25	·37	8·72	
	39	W. T. Allen	1·0444	2·40	·33	11·00	V. H. C.
	40	A. J. Candy	1·0444	3·20	·51	12·28	
	41	Mrs. B. Chiffers ..	1·0297	4·25	·39	8·57	1st Prize.
	42	D. J. Crofts & Son ..	1·0386	3·00	·36	10·46	
	43	H. J. Davis	1·0354	3·70	·41	10·05	2nd Prize.
	44	C. Osborn & Son ..	1·0284	4·10	·50	8·27	
	45	W. T. S. Tilley ..	1·0295	5·00	·32	8·94	8·16
	46	H. Tucker	1·0284	3·80	·42	8·16	
	47	J. Watts & Co. ..	1·0494	2·20	·80	13·07	

FARWELL on the Society's 1902 Exhibition of Cider. 109

Class.	No.	Name of Exhibitor.	Specific Gravity at 60° F.	Alcohol by Volume.	Acidity,	Solids per cent.	Award.
178	48	W. T. Allen	1·0454	2·15	·40	12·08	H. C. 2nd Prize. { 1st Prize & R. for Champion.
	49	A. J. Candy	1·0473	3·00	·46	12·85	
	50	Mrs. B. Chiffers ..	1·0277	4·10	·36	7·98	
	51	D. J. Crofts & Son ..	1·0387	2·90	·43	10·47	
	52	H. J. Davis	1·0355	3·50	·41	10·16	
	53	H. J. Davis	1·0425	3·70	·38	11·65	
	54	C. Osborn & Son ..	1·0322	3·55	·39	9·17	
	55	Mrs. W. T. S. Tilley	1·0315	5·00	·35	9·47	
	56	Mrs. W. T. S. Tilley	1·0324	4·50	·26	9·67	
	57	H. Tucker	1·0314	3·85	·42	9·96	
	58	J. Watts & Co.	1·0474	2·05	·74	12·59	2nd Prize.
179	59	R. Rout & Son	1·0205	4·80	·38	6·31	
180	60	R. Rout & Son	1·0204	5·15	·41	6·41	
	61	R. Rout & Son	1·0174	4·70	·45	5·50	R.
181	62	A. Knight	1·0434	2·45	1·24	11·43	2nd Prize.
182	63	A. Knight	1·0374	2·45	1·10	9·88	2nd Prize.
	64	A. Knight	1·0459	1·65	1·15	11·76	1st Prize.
	65	H. Thomson	1·0505	1·45	·99	12·91	

APPENDIX B.

Class.	No.	Name of Fruit.	Information relative to Fruit.	Soil of Orchard.	General Information.
167. Cider made in Devon. Casks containing not less than 4 per cent. of alcohol.	1	Mixed	Sp. gr. of juice, 1·058	Heavy loam.	Farmyard manure and road scrapings used occasionally on orchards.
	2	Mixed	Trees usually fair bearers. Fruit ripe in October. Crop below average. Sp. gr. of juice, 15 to 20.	Light loam; clay subsoil.	Orchards manured by cattle.
	3	Mixed	Medium crop. Trees usually good bearers.	Climstone.	Farmyard manure used on orchards.
168. Bottles. Ditto.	4	.. .. .	Same as No. 1.		
169. Casks containing less than 4 per cent. of alcohol.	5	Equal quantities of Bitter Sweet, Sweet and mild Sour.	Trees usually good bearers. Good crop. Fruit ripe in November. Sp. gr. of juice, 1·056.	Light loam; slate subsoil.	Orchards manured with farmyard manure in spring, and cider made as at Butleigh, and apples hoarded.
	6	Mixed	Sp. gr. of juice, 1·056	Heavy loam.	Orchards occasionally manured with farmyard manure and road scrapings. Cider made from apples grown in different parts of S. Devon.
170. Bottles. Ditto.	7	Mixed	Fruit ripe in November. Crop below average. Sp. gr. of juice, 1·052.	Light.	
	8	Same as No. 5.			
	9	Same as No. 6.			

10	Mixed	Fruit ripe in October. Crop below average. Trees usually fair bearers. Sp. gr. of juice, 15 to 20.	Light loam; clay subsoil.	Orchards manured by cattle.
11	171. Cider made in Herefordshire. Casks containing not less than 4 per cent. of alcohol.	Equal quantities of Strawberry Norman, Cumming Norman, and Kingston Blacks.	Fruit ripe in October. Crop fair. Trees usually good bearers. Average weight of apples, 4 oz. Sp. gr. of juice, 1.060, when made.	Stiff clay. No manure used on orchards.
12	172. Bottles. Ditto.	Same as No. 11.		
13	173. Casks containing less than 4 per cent. of alcohol.	Mixed	Fruit ripe early. Average crop. Trees not good bearers.	Clay. No manure used on orchards.
14	174. Bottles. Ditto.	Same as No. 13.		
15		Equal quantities of Foxwhelp and White Normans.	Fruit ripe early. Crop below average. Trees not usually good bearers.	Loam. No manure used on orchards.
16		Equal quantities of Red Styres and White Normans.	Fruit ripe early in October. Styres above average crop; White Normans below. Trees usually good bearers.	Clay.
17		Old Foxwhelp	Fruit ripe in October. Crop above average. Trees not usually good bearers.	Ditto.

APPENDIX B.—*continued.*

Class.	No.	Name of Fruit.	Information relative to Fruit.	Soil of Orchard.	General Information.
176. Cider made in Somerset. <i>Calts con- taining not less than 4 per cent. of alcohol.</i>	18	Equal quantities of Red Jerseys, Norton Bitters, and Cap of Liberty.	Fruit ripe in November. Average crop. Trees good bearers every other year. Sp. gr. of juice, 1·060.	Alluvial.	Farmyard manure used on orchards.
	19	Four varieties, mostly sweet	Fruit ripe in November. Fair crop. Trees usually good bearers. Weight of apple, about 6 to a lb.	Clay.	Orchards fed with sheep post five years. Stable manure mixed with mould used since apples were gathered.
	20	Equal quantities of Royal Chisel and Green Jerseys, one-eighth Cap of Liberty.	Fruit ripe in November. Crop above average. Trees usually good bearers. Sp. gr. of juice, 1·063.	Heavy, with clay subsoil.	
	21	Equal quantities of Royal and White Jerseys, Red Streaks, Cadburys, and Corton Pippin.	Fruit ripe in November. Crop above average. Trees usually good bearers. Sp. gr. of juice, 1·060.	Ditto.	
	22	Three-quarters Royal Chisel and Green Jerseys; one-quarter Kingston Blacks and Cap of Liberty.	Fruit ripe in October and November. Crop about average. Trees good bearers. Fruit well ripened. Sp. gr. of juice, 1·063.	Sandy loam, subsoil clay.	Cattle fed on cake continually in orchards.
	23	Three parts Sweet and one part slightly Sour.	Fruit ripe in October and November. Average crop. Trees usually good bearers. Fruit matured and well coloured. Sp. gr. of juice, 10·60.	Deep sandy loam.	Stock fed in orchards and road dirt used.
	24	Equal quantities of Kingston Blacks, Royal Jerseys, Gina, and Horners.	Fruit ripe in October and November. Crop above average in some districts, none in others. Trees usually good bearers. Fermentation very slow this season. Sp. gr. of juice, 1·068.	Loam, clay subsoil.	Pigs, sheep, and cattle in orchard.
	25	Mixed.. ..	Fruit ripe in November. Crop below average. Trees usually fair bearers.	Ditto.	Orchard not manured.

176.	Black, and Cup of Liberty.	above average. Trees good bearers. Average weight of apples, 1½ to 2½ ozs. Sp. gr. of juice, 58° 52.	clay subsoil.	orchards, and road dirt occasionally used.
Bottles.				
Ditto.				
27	Same as No. 18.	Fruit ripe in October and November. (Crop about average. Trees generally good bearers. Sp. gr. of juice, 1° 061.	Sandy loam, subsoil clay.	Cattle fed on cake in orchards and manure used when fruit is cleared.
28	Same as No. 19.			
29	Same as No. 20.			
30	Same as No. 21.			
31	Same as No. 22.			
32	Two-thirds Red and Green Jerseys and Harry Masters, and one-third Kingston Blacks and Cup of Liberty.			
33	Same as No. 23			
34	Same as No. 23 but larger proportion of sour apples used.			
35	Equal quantities of French Jerseys, Naish's Bitters, and Cadbury's.	Cadbury's ripe early in October. Others end of October. (Crop above average in some districts, none in others. Trees usually good bearers. Sp. gr. of juice, 1° 066.	Loam, clay subsoil.	(Orchards manured by pigs, sheep, and cattle.
36	Equal quantities of Doves, Pomeroy's, Ladies' Hearts, and mixed.	Fruit ripe in November. (Crop above average in some districts, none in others. Pomeroy's not usually good bearers. Sp. gr. of juice, 1° 065.	Ditto.	Ditto.
37	Same as No. 24.			
38	Same as No. 25.			
39	Equal quantities of New Cadbury's, Horners, and Gins.	Fruit ripe in November. Average crop. Trees usually good bearers. Sp. gr. of juice, 1° 055.	Alluvial.	Orchards manured with farmyard manure.
40	Equal quantities of Horners and Red Jerseys, with few Kingston Blacks	Fruit ripe in November. Average crop. Trees fairly good bearers. Apples in fine condition. Sp. gr. of juice, 1° 066.	Clay.	(Orchards manured at fall of the year with farmyard manure.
41	Four sweet varieties	Fruit ripe in November. Fair crop. Trees usually good bearers. Weight of apples about 8 to a lb.	Ditto.	Orchards fed with sheep for last five years, and stable manure mixed with mould used since apples were gathered.

177.

Casks containing less than 4 per cent. of alcohol.

APPENDIX B.—continued.

Class.	No.	Name of Fruit.	Information relative to Fruit.	Soil of Orchard.	General Information.
177. Cider made in Somerset. <i>Cider containing less than 4 per cent. of alcohol.</i>	42	Mixed	Fruit ripe in November. Crop above average. Trees usually good bearers. Sp. gr. of juice, 1·055.	Heavy clay subsoil.	
	43	Three-quarters Red, White, and Sandford Jerseys and Cadbury's; one-quarter Cap of Liberty.	Fruit ripe in October and November. Average crop. Trees usually good bearers. Sp. gr. of juice, 1·054.	Clay.	Orchards manured with droppings from cattle fed on cake when fruit is cleared.
	44	Three parts sweet and one part slightly sour.	Fruit ripe in October and November. Average crop. Trees usually good bearers. Fruit mature and well coloured. Sp. gr. of juice, 10·50.	Deep sandy loam.	Orchards manured by general stock-feeding, and road dirt, &c., used.
	45	Equal quantities of (hisel and Red Jerseys, and Horners.	Fruit ripe at end of October and early in November. Crop above average in districts, none in others. Trees usually good bearers. Sp. gr. of juice, 1·066.	Loam, clay subsoil.	Orchards annually manured by pigs, sheep, and cattle.
	46	Various	Fruit ripe in November. Crop below average. Trees fair bearers.	Ditto.	Orchards not manured.
178. <i>Bottle.</i> <i>Ditto.</i>	47	Equal quantities of Kingston Blacks and Cap of Liberty.	.. ..	Heavy loam.	
	48	Same as No. 39.	.. ..	
	49	Same as No. 40.	.. ..	
	50	Same as No. 41.	.. ..	
	51	Same as No. 42.	.. ..	
	52	Same as No. 43.	.. ..	
	53	Equal quantities of Red and White Jerseys and Harry Masters'; one-eighth Kingston Blacks. Same as No. 44.	Fruit ripe in October and November. Crop about average. Trees usually good bearers. Sp. gr. of juice, 1·053.	Clay.	Orchards manured when fruit is cleared off by droppings from cattle fed on cake.
	54				

No.	Description	Equal quantities of Royal Jerseys, Cullinys, New Cullinys, and Horners.	Fruit ripe in October and November. Crop above average in districts; none in others. Trees usually good bearers. Sp. gr. of juice, 1.067.	Heavy loam. Clay.	by pigs, sheep, and cattle.
56	179. Cider made in Counties other than Devon, Hereford, or Somerset.	Same as No. 45.	.. .. .	Heavy loam. Clay.	Farmyard manure used in winter on orchards. Cider made in Norfolk.
57		Same as No. 46.	.. .. .	
58		Kingston Black.	.. .. .	
59		Mixed .. .. .	.. .. .	
60	180. Bottles	Mixed	Fruit ripe in October. Crop below average. Trees good bearers.	Ditto.	Orchards not manured. Cider made in Norfolk.
61	Ditto.	Stone's Pippin	Fruit ripe in November. Crop below average. Trees usually good bearers.	Ditto.	Ditto.
62	181. Casks containing less than 4 per cent. of alcohol.	Skymes Kernel	Fruit ripe in October. Average crop. Trees usually good bearers. Weight of apples, 2 to 3 oz.	Ditto.	Cider made in Gloucester.
63	182. Bottles.	Same as No. 62.	.. .. .	
64	Ditto.	Equal quantities of Cowarne Red and Foxwhelp.	Fruit ripe in October. Crop below average. Trees not good bearers. Weight of apples, 2 oz.	Ditto.	Ditto.
65		Skymes	Fruit ripe in November. Crop above average. Trees fair bearers.	Heavy.	Ditto.

XII.—*Investigations into the Manufacture of Cider. Report for 1902.* By F. J. LLOYD, F.C.S.

THE object of science is to teach men how to control, so far as may be possible, the forces of Nature. It is evident that before we can control them, we must thoroughly know and understand what these forces are and how they work. It is by studying these natural agents, and then by controlling their effect in the industry with which one is for the moment concerned, that science becomes of practical value. Probably no industry depends so much upon natural forces as does that of agriculture; hence no industry should derive greater benefit from science. But, unfortunately, this truth is not yet fully realised.

The past season has been one presenting especial difficulties, and seldom has there been greater need for knowledge on the part of cider-makers. In the first place, the crop of apples was small; secondly, the juice was exceptionally poor; and thirdly, the great heat which prevailed during the early part of the making season produced in the juice a tumultuous and uncontrollable fermentation.

All these factors are detrimental to the manufacture of good cider, and the chief object of the experiments at Butleigh was to try and control, and so to surmount these natural difficulties.

THE SEASON.

The following figures show what was the average rainfall, temperature, and sunshine for the seven months, April to October.

WEATHER REPORT, 1902.—FOR CULLOMPTON.

MONTHS.	AIR TEMPERATURE.		RAINFALL.	
	Min. and Max. combined.	Difference from Average.	Total fall in Month.	Difference from Average.
	°F.	°F.	Inches.	Inches.
April	46·5	-1·5	1·63	-0·75
May	49·8	-2·6	2·35	+0·22
June	57·1	-1·2	2·69	+0·49
July	59·6	-2·0	2·03	-0·87
August	59·7	-1·0	3·13	+0·24
September	55·7	-1·5	2·22	-0·94
October	50·2	+1·6	2·85	-1·06

MONTHS.	BRIGHT SUNSHINE.			
	No. of Hours recorded.	Difference from Average.	Percentage of possible Duration.	Difference from Average.
April	153.7	- 1.2	37	- 1
May	198.8	- 1.5	42	0
June	155.6	-46.2	32	- 9
July	197.3	+ 9.9	40	+ 2
August	138.0	-46.3	31	-11
September	161.4	+20.4	44	+ 5
October	71.5	-26.2	22	- 8

These figures ought to explain why the crop was small and the juice poor. A small crop is generally due to the climatic conditions which prevail in the early part of the season, and which check the production of fruit.

The size of the apples, and the composition of the juice which they yield, depend, however, more on conditions prevailing in the later portion of the season.

A dry season generally results in small apples; but the juice of these, if small in quantity, is rich in quality. A wet season is likely to produce larger apples, containing more juice, but juice of poorer quality. The composition of the juice depends very largely upon the amount of sunshine, and the air temperature.

The season 1902 was a dry one, the rainfall being below the average, but in spite of this the apples were not smaller than usual. Probably the explanation is that the crop being small there was enough sap to fully nourish the growing apples. The percentage of juice from these apples was, however, small, as compared with the average yield. This is seen by comparing the results of the analyses of the apples with those of the same apples in past years.

But the most striking characteristic is the poverty of the juice, and its peculiar composition.

The poverty of the juice may best be seen by comparing the average composition of the juice from press with that obtained in former years, as shown in the Table on page 118.

I attribute the poverty of the juice to the low temperature which prevailed, and to the want of sunshine. In other words, the apples did not seem to properly ripen. Every one knows the great difference between a hard unripe apple and a soft ripe apple. In the ripe apple the hard material present in the early stages has undergone considerable change, becoming not only soft but soluble in water, and subsequently being converted

AVERAGE COMPOSITION OF JUICE FROM PRESS.

Year.	No. of Samples.	Specific Gravity.	Solids.	Acid.
1893	6	1·060	14·40	·63
1894	11	1·050	11·14	·60
1895	13	1·052	12·24	·46
1896	5	1·057	14·02	·40
1897	5	1·053	13·26	·68
1898	5	1·056	13·62	·51
1899	14	1·061	15·57	·44
1900	54	1·059	..	..
1901	12	1·057	14·43	·34
1902	8	1·047	11·43	·53

into sugar. This season these changes had not taken place. A certain amount of the hard material (pectin compounds) was rendered soluble, but was never converted into sugar. Hence, in the analyses of the juice, they are present in the form of extractives, that is, bodies of uncertain composition present in solution in the juice. Never since the analyses of apples were commenced at Butleigh has the proportion of these "extractives" been so high. It would seem that unless the changes which convert these extractives into sugar are brought about, or at least started, while the apple is on the tree, they will not be subsequently completed by ripening in store. I am quite convinced that in the future it will be worth while to devote some study to these extractive matters, with a view to ascertaining what they are, how they are produced, what changes, if any, they undergo during the fermentation of the juice, and how and to what extent they influence the resulting cider. This subject alone will take some years to investigate. for it is only now and again that a season causes them to be exceptionally high, and so capable of being studied.

An experiment to determine the volume of juice yielded by 1000 lbs. of apples, gave the following results:—Weight of cheese, 1850 lbs., yielding 1333 lbs. of juice and 517 lbs. of pressed pomace. Or 1000 lbs. apples yielded 720 lbs. of juice. This is the highest recorded result at Butleigh, and therefore does not agree with the analyses of the apples. I believe it to have been due to the moist condition of the apples used for the experiment.

VARIETIES OF APPLES.

A number of apples, in all forty-four, were analysed as in former years, and the results of these analyses are given in the

Appendix. Upon studying these analyses with the composition of the same apples in former years, we note the facts previously referred to.

There is one result of some interest to which it is worth while to draw special attention. Two analyses were made of Kingston Black apples—one sample received from Mr. Tucker, one from Mr. Crofts. A sample of so-called Improved Kingston Black was also received from Mr. Chiffers. This so-called improved variety was a smaller apple, yielded a smaller percentage of juice, and the juice was not only of poorer quality as regards sugar, but contained far more acid than the ordinary samples. Where then was the “improved” condition? I draw special attention to this result, because it is not unique in my experience; and I would warn all cider-makers who are endeavouring to improve their orchards against so-called “improved varieties,” unless they have very strong proof that the varieties are really improvements.

FERMENTATION.

The foregoing Table shows the nature of the juice which had to be dealt with this season. It was as usual pumped into keeves, and it threw up white heads, which have of late years been the rule rather than the exception. A white head in keeve generally denotes rapid fermentation, and is the first indication of this condition, which is probably in ordinary practice the most frequent, and at the same time the most difficult, the cider-maker has to contend against. After being skimmed twice, the juice was racked into the fermenting barrels. As is now the regular practice at Butleigh, as it should be in every well-conducted cider-house, the gravity of the juice was taken as it came from the press, again as it came from the keeve, and at intervals of a week when it was in the fermenting barrels. The following Table, which gives some of these figures, is interesting, as showing the remarkable rate at which the juice was fermenting:—

THREE EXAMPLES SHOWING RATE OF FERMENTATION.

—	Temp. of Juice 52° F.		Temp. of Juice 52° F.		Temp. of Juice 40° F.	
Juice from press ..	Oct. 23	1·050	Nov. 5	1·051	Nov. 29	1·050
1st skim in keeve ..	.. 28	1·045	.. 10	1·047	.. 26	1·047
Put in barrel .. ..	.. 30	1·040	.. 11	1·045	.. 27	1·047
1st racking	Nov. 3	1·023	.. 17	1·031	Dec. 15	1·033
2nd .. .. ..	.. 8	1·010	.. 24	1·020	.. ..	..
3rd .. .. ..	.. ..	..	Dec. 1	1·013	.. ..	..
Filtered .. .. ..	.. ..	..	.. 9	1·010	.. 21	1·025

The cold weather set in on November 18th-19th. Hence, the first lot could not be saved from over-fermenting. The second was partly saved, and the third quite controlled. Now, if we calculate the diminution of the specific gravity of these three barrels we find that the rate of fermentation was as follows :—

a. In 16 days lost specific gravity	·040 or ·0025 per day.
b. In 34	·041 or ·0012
c. In 32	·025 or ·0008

As stated in my Report for 1900, the rate of fermentation in 1899 represented a daily loss of ·0007 in specific gravity, and in 1900 of ·0011. This was considered rapid, so one can form a fair idea of the remarkable rapidity of the fermentation in the twenty barrels made prior to the cold spell of 19th-26th November. It was quite impossible to control the first twelve of these barrels; and although the cold spell enabled the remaining eight to be saved from excessive fermentation, it was only by the exercise of that careful attention which can alone secure success in cider-making.

To check fermentation it is necessary to resort to racking. The juice was therefore racked. But to no purpose; fermentation continued to proceed as rapidly as before. What then was to be done? It looked on 12th November as if there would be no good cider made. Why was this? So far as one could judge it was mainly due to the high temperature which had up to this time prevailed. If only the juice could be cooled this rapid fermentation would be checked. But how could the juice be cooled? It is a curious fact that it is very easy to warm any material, but very difficult to cool it. My first thought was to cool the juice by means of water, as in an ordinary refrigerator; but upon taking the temperature of the water this was found to be only two or three degrees below that of the cider, and so the idea had to be abandoned. What then could be done? I have pointed out in former Reports that fermentation is due to yeast-cells living in the juice, and that the amount of change which they bring about depends upon two factors: first, the temperature at which they work, the higher the temperature the greater being the amount of change, or fermentation; and secondly, upon the number of cells at work.

Now it was evident that we could not reduce the temperature, and also evident that keeving and racking—both of which operations have for their objects, amongst others, that of reducing the number of yeast-cells—were this year not sufficient. It was therefore certain that if any beneficial results were to be obtained the yeasts must be diminished before keeving. Two methods of doing this were thought worthy of

experiment. The one was washing the apples, the second Pasteurising the apple-juice.

WASHING THE APPLES.

An experiment made in 1900 showed that the juice from washed apples fermented more slowly than the juice from unwashed apples. Hence the following experiment was made. Two cheeses were put up on the same day; the first with unwashed apples, the second with some of the same bulk of apples which were washed while the first cheese was being extracted.

The following are the tabulated results of this experiment :—

		Unwashed.		Washed.
Specific gravity of juice	..	1·045	..	1·045
When racked into barrel	..	1·040	..	1·043
When filtered	.. ..	1·025	..	1·028

It will be seen that the effect of washing the apples was to diminish the rate of fermentation. Unfortunately, this experiment, which was started on the 13th–14th November, was interfered with by the sudden spell of cold weather from the 19th to 26th. This so reduced the temperature of the fermenting juice that it played a more important rôle than the washing. Nevertheless, I think cider-makers should not forget these results, as they indicate one way in which partly to overcome excessive fermentation in a warm season.

PASTEURISATION.

This method of checking fermentation—so called from its discoverer the renowned scientist, Pasteur—is to heat the juice to such a temperature as to destroy the greater portion of the yeasts therein. I have tried only a few experiments on Pasteurisation previously, and for two reasons: first, one does not yet know whether the most desirable, or the most undesirable, cider-yeasts are those most easily destroyed, and until this fact is discovered there is a certain risk in Pasteurising the juice; secondly, after being Pasteurised, the juice should be inoculated with a pure yeast in sufficient quantity to ensure a proper subsequent fermentation. But this necessitates the possession of a suitable cider yeast, ready prepared, in sufficient quantity to add to the Pasteurised juice. In former experiments on pure yeasts, where the juice has been Pasteurised, the effect of Pasteurisation was not the object of the experiment, and so had not been studied. It was now necessary to see how far fermentation was checked, and what were the other results

due to this heating of the juice. Not having any special yeast, the Pasteurised yeast was pumped back upon the lees in a keeve to be "inoculated," or seeded with yeast, as it was not desired to altogether check fermentation.

No special apparatus being available, it was necessary to fit one up as quickly as possible. Messrs. Lumley and Co. kindly lent me two tinned copper coils with fittings, and these were inserted into two large open barrels.

In the first experiment the cider was placed in the barrel, and steam was passed through the coil until the whole of the juice was raised to a temperature of 160° Fahr. Cold water was then allowed to flow through the coil, the temperature of the juice was reduced to 44° Fahr., and it was then pumped into a keeve to ferment.

In heating this juice it acquired the smell of cooked apple-juice as in an apple pie. Whether this will give to the resulting cider a characteristic flavour remains to be seen.

In the second experiment the apple-juice was passed through the coil, which was surrounded with hot water, kept heated by a steam-pipe passing into the water. The flow of the cider through the coil was regulated by a tap, and the temperature was recorded by a thermometer inserted into the end of the coil before the tap. The heated (Pasteurised) cider then flowed through another coil, surrounded with cold water, and was pumped into the keeve.

The cider was heated to 160° Fahr. and then cooled, and in the keeve it registered a temperature of 47° Fahr.

The heat produced by the steam was not sufficient to raise the water to nearly 212° Fahr., as it should be, consequently the process of heating the cider was very tedious.

This was, of course, only an experiment, and if the Pasteurising apparatus were permanently required it would be necessary to have more steam power than was available for the experiment, or to place the heating coil in a metal drum containing water over an open fire.

A special apparatus for the Pasteurisation of cider is manufactured by Messrs. Lumley and Co.

The result of Pasteurisation was satisfactory, so far as delaying fermentation was concerned. The juice which had been passed through the coil in the second experiment fermented more gradually, and though having a specific gravity of 1.026, was filtered with greater ease than the juice from the first experiment, which had a gravity of only 1.021. The juice had a good colour and flavour when filtered; that from the second experiment was not so dark in colour as that from the first. I think the first juice was slightly caramelised.

How these ciders will turn out when mature remains to be discovered.

On the 19th November a spell of cold weather set in and lasted for a week. It is by making use of these irregular conditions which our climate affords that the skilful cider-maker must generally hope to benefit. Such a cold spell will check fermentation, and every barrel of cider should be racked, if possible, during this period, should it last long enough to cool down the cider. As a rule, it does not last very long, so it is wise to commence racking those barrels which are most rapidly fermenting. It must not be forgotten that it takes a few days of rather sharp cold to much reduce the temperature of the fermenting cider. Past experiments indicated that if the temperature sank to 40° Fahr., fermentation was checked and the juice cleared. The subject, however, needs much more prolonged investigation than has yet been given to it. The best course for the cider-maker to adopt is to test whether the cider is clearing, and the barrel which clears first should be the first racked. Owing to the fact that the science of fermentation is not sufficiently understood by makers, it is pitiful to see how these natural conditions are neglected, whereas they might be so beneficially utilised.

On the 24th November the temperature again rose, and continued high for some time. Then came another spell of cold weather, followed soon by further warm weather, and subsequently by another frost.

These cold spells were utilised at Butleigh to rack the cider in the first two instances, and subsequently to filter it. In this way it has been possible to prevent a large portion of the cider from fermenting too far. It was impossible to stop the early made cider from fermenting, and consequently much of it fell to a specific gravity lower than was desired.

FLAVOUR IN CIDER.

A few experiments started last year, to try and determine whether the flavour of an apple was retained in the resulting cider, have to be reported on. Three varieties of apples were taken, and table fruit was selected because of the more marked flavour which these apples possess. A sufficient quantity of Nonpareil, Sturmer Pippin, and Cox's Orange Pippin apples were separately ground, their juices extracted, fermented, and bottled, and the bottles stored away. On December 3rd, 1902, nearly a year after bottling, the samples were tasted, and Mr. Neville Grenville and his gardener were separately asked to determine from the taste from which apples the cider was

made. It was not an easy task as the flavour was not marked, but the gardener immediately distinguished the cider made from Nonpareils, and Mr. Neville Grenville at once recognised that the second sample was made from a pippin of some kind.

Now these results are of considerable importance. The value of cider depends more upon its flavour than upon any other quality. If, then, this flavour is dependent, however slightly, upon the characteristic flavour of the fruit, it is only one more argument as to the necessity for care in the planting, tending, and treatment of cider fruit, and in the blending of apples or juice. But it must not for a moment be supposed that the flavour of cider depends *only* on the original flavour of the apple. As already stated, it was not easy to determine from which variety each of these ciders was made. Yet each possessed a strong and characteristic flavour, due evidently to fermentation, and not to the original flavour of the apple. Indeed, we do not yet know how far even this flavour of the apple might not itself have been due to fermentation.

FERMENTATION IN BOTTLE.

In last year's Report I ventured to express the opinion that the secondary fermentation which takes place in cider, and probably all alcoholic liquids, was due to the growth of bacteria, and not to the growth of yeasts. The flavour of cider depends largely, I think mainly, upon this secondary fermentation. Hence it was desirable to continue my investigations, and try and determine whether my observations would be confirmed by further work. To this end a barrel of cider was well filtered and bottled in January, 1902, and subsequently, from time to time, a bottle of this cider was sent to my laboratory in London. The bottle having been allowed to rest until the sediment had deposited, a portion of the sediment was then carefully examined under the microscope. One month after bottling, some bacteria were present in the sediment, which, however, consisted mainly of yeast-cells. As month by month passed the bacteria increased, and after the third or fourth month the yeasts began to visibly decrease in numbers, also in size. In fact, it became difficult to distinguish whether it was a diminutive yeast or large bacillus. The results confirmed my previous observations, and I am convinced that a new field of work here presents itself. Much work will have to be done and much time must be devoted to this subject in the future. But I am now quite convinced in my own mind that secondary and flavour-producing fermentation is mainly the work of microbes, and not of yeasts. Not that yeasts are unnecessary, most

certainly they are necessary, either to prepare the way for the growth and action of the bacteria, or, as is not unlikely, as simultaneous workers with the bacteria.

OILY CIDER.

One remarkable fact about the preceding experiment is that the cider made from Cox's Orange Pippin was oily.

This fact seems to confirm an opinion which has for some time been strengthening in my mind, namely, that the cause of oily cider is due to an organism or organisms growing upon special varieties of fruit under special conditions of climate. How else can this result be explained? In the ordinary make of cider there was not a single drop that was oily. It might have been by an accident that this juice became inoculated, because I was experimenting with the organisms supposed to produce oily cider. But I do not think this likely. Naturally great care is taken when making such experiments, and I am unable to trace any connection in the dates of the two experiments which would lend itself to the assumption that there was accidental contamination.

APPENDIX.

COMPOSITION OF THE JUICE OF VARIOUS APPLES, 1902.

Name of Apple.	No.	Average Per- centage of Apple.	COMPOSITION OF THE JUICE.						Grower.	District.
			Sp. Gr.	Total Solids.	Acid.	Grape Sugar.	Cane Sugar.	Tannin.	Ex- trac- tives.	
Broadleaf ..	327	3.19	1.0564	13.84	.14	12.84	0.44	.260	0.600	D. J. Crofts .. Sutton Montis S.
Cap of Liberty ..	328	1.39	1.0561	14.10	.66	10.64	0.64	.250	2.550	Do. .. Do. S.
Corton Pippin ..	329	2.56	1.0537	13.72	.29	11.24	0.96	.230	1.090	Do. .. Do. S.
Dove ..	330	2.81	1.0578	14.13	.13	11.28	1.24	.192	1.278	Do. .. Do. S.
Dr. Walsh's Bitters ..	331	2.10	1.0630	16.54	.21	8.54	2.56	.505	4.725	F. J. Hayes .. W. Pennard S.
Green Cadbury ..	332	2.37	1.0530	13.34	.06	9.34	1.82	.134	1.986	D. J. Crofts .. Sutton Montis S.
Hereford Foxwhelp ..	333	4.56	1.0551	14.24	.18	8.18	1.16	.145	4.575	F. J. Hayes .. W. Pennard S.
Horner or Hangdown ..	334	2.12	1.0541	14.44	.07	9.86	2.34	.216	1.954	D. J. Crofts .. Sutton Montis S.
Improved Black ..	335	1.30	1.0502	11.72	.67	9.58	0.78	.142	0.548	B. Chiffers .. (Butleigh } S. Wootton }
Kingston Black ..	336	2.12	1.0546	13.52	.42	9.58	1.48	.186	1.904	H. Tucker .. Sutton Montis S.
Do. ..	364	1.75	1.0586	14.38	.29	12.20	0.60	.178	1.112	D. J. Crofts .. Do. S.
Lottisham Jerseys ..	337	2.10	1.0629	11.34	.21	9.00	1.74	.535	2.855	F. J. Hayes .. W. Pennard S.

Nevesblight Green	338	2.87	69	1.0517	13.28	.55	8.46	1.54	.135	2.595	F. J. Hayes	..	W. Pennard
Royal Jersey	339	2.87	58	1.0705	17.90	.22	11.62	1.04	.022	4.628	D. J. Croft	..	Sutton Montis S.
Do.	341	2.19	54	1.0507	15.48	.07	11.50	0.36	.200	3.250	H. Tucker	..	Do.
Tom Hooper	342	2.85	49	1.0534	12.64	.93	7.56	0.62	.140	3.390	R. N. Grenville	..	Butleigh
Unknown Butleigh No. 1	343	1.10	72	1.0534	13.22	.40	7.24	0.94	.275	4.365	Do.	..	Do.
Do.	370	1.97	50	1.0643	16.30	.17	10.00	1.90	.190	4.040	Do.	..	Do.
Do.	344	1.30	61	1.0630	16.44	.85	9.00	2.90	.345	3.345	Do.	..	Do.
Do.	345	3.70	90	1.0556	14.46	.80	8.68	0.84	.805	3.835	Do.	..	Do.
Do.	346	1.35	59	1.0616	14.96	.68	7.68	2.22	.280	4.100	Do.	..	Do.
Do.	347	1.65	60	1.0590	12.72	.17	7.60	2.58	.074	2.296	Do.	..	Do.
Do.	348	1.55	45	1.0540	13.48	.20	10.08	0.70	.164	2.336	Do.	..	Do.
Do.	349	2.00	47	1.0532	13.80	.15	8.46	2.20	.092	2.898	Do.	..	Do.
Do.	350	2.50	50	1.0594	14.72	.22	10.88	1.62	.184	1.816	Do.	..	Do.
Do.	351	1.04	36	1.0835	21.64	.15	13.92	3.00	.244	4.326	Do.	..	Do.
Do.	352	1.90	47	1.0542	14.36	.22	8.91	2.50	.052	2.648	Do.	..	Do.
Do.	353	2.81	37	1.0664	14.60	.63	10.00	1.68	.118	2.172	Do.	..	Do.
Do.	354	2.00	57	1.0554	13.78	.17	10.46	1.10	.230	1.820	Do.	..	Do.
Do.	355	2.62	57	1.0545	13.08	.87	8.72	0.28	.224	2.986	Do.	..	Do.
Do.	356	1.45	44	1.0610	14.68	.55	9.00	1.20	.048	3.882	Do.	..	Do.
Do.	357	1.25	36	1.0504	12.86	.94	10.24	0.76	.214	0.706	Do.	..	Do.
Do.	358	1.69	63	1.0556	13.06	.70	10.58	1.42	.170	0.190	Do.	..	Do.

S. Somerset.

APPENDIX.—COMPOSITION OF THE JUICE OF VARIOUS APPLES, 1902—continued.

Name of Apple.	No.	Average Weight of Apple.	Percentage of Juice.	COMPOSITION OF THE JUICE.						Ex-trac-tives.	Grower.	District.
				Sp. Gr.	Total Solids.	Acid.	Grape Sugar.	Cane Sugar.	Tannin.			
Unknown Butleigh	No. D } 359	ozs. 2.06	51	1.0556	13.52	.59	10.14	0.92	.094	1.776	R. N. Grenville	Butleigh S.
Do. Do. No. E	360	2.18	51	1.0557	11.64	.39	10.42	0.33	.204	0.246	Do.	Do. S.
Do. Do. No. F	361	1.75	71	1.0497	11.80	.24	9.00	1.42	.174	1.068	Do.	Do. S.
Do. Do. No. G	362	1.62	61	1.0583	13.30	.85	10.23	0.96	.142	1.068	Do.	Do. S.
Do. Do. No. H	363	1.70	53	1.0598	12.86	.71	11.06	0.74	.152	0.198	Do.	Do. S.
Do. Do. No. K	366	5.75	34	1.0495	11.92	.20	8.76	1.63	.170	1.190	Do.	Do. S.
Unknown..	No. L 340	1.10	63	1.0618	15.76	.13	10.96	1.84	.244	2.566	D. J. Crofts	Sutton Montis S.
Unknown..	No. M 365	0.95	57	1.0477	12.03	.13	9.66	0.80	.160	1.330	H. Tucker	Do. S.
Upright French	No. N 367	1.25	64	1.0516	11.82	.17	10.46	0.60	.248	0.442	A. T. Biscoe	Herefordshire.
White Jersey	No. O 368	1.45	75	1.0583	14.16	.13	9.10	3.10	.150	1.680	D. J. Crofts	Sutton Montis S.
Do. Do. No. P 369		0.85	76	1.0533	13.44	.05	9.50	1.78	.194	1.916	H. Tucker	Do. S.

S. Somerset.

XIII.—*A Pomological Congress.* By F. J. LLOYD, F.C.S.

SEVEN years have passed since the Bath and West and Southern Counties' Society sent representatives to attend the Pomological Conference held at St. Brieuc in October, 1895. This year the Society was invited to send delegates to the nineteenth Congress of the Association Française Pomologique, but as there was no meeting of the Council prior to the Congress, I decided to attend on my own account. Whether it was because of my connection with the Bath and West Society or not, my reception was most cordial, and from the President, Mons. Léon Legludic, Sénateur de la Sarthe, from the Secretary, Prof. Jourdain, and from the Members of the Congress, the attention bestowed upon me was such as only Frenchmen seem to know how to give to a stranger. My friend, Mons. Truelle, who has done so much to advance the science of cider-making in France, was unfortunately too ill to be present, but I had the pleasure of renewing acquaintance with Mons. H. Sagnier, the well-known member of the Société Nationale d'Agriculture de France, who is Director of the "Journal de l'Agriculture," and of making the acquaintance of M. Warcollier, whom I already knew by correspondence, and to whom has been entrusted the task of founding a Cider Institute in France, such as is proposed for the West of England.

A meeting in connection with the proposed establishment of this last named Institute was held at Bristol the same day as the first Congress in Amiens, so that I did not arrive in Amiens until the afternoon of the second day, in time, however, to attend the evening Congress.

Looking back at this meeting in Amiens, the first thought which occurs to me is why can we not have a similar Congress in England? Surely cider-making is an industry which can still be improved, and how can that improvement be inaugurated better than by friendly conference and kindly criticism among practical and scientific men? It was most interesting and instructive to hear the practical men set forth the difficulties of carrying out some of the scientific views and suggestions enunciated at Amiens, while, on the other hand, science was able to explain difficulties met with by the practical men, and to advise them how to proceed in future. The impression left on my mind was one of immense benefit received by all; and the private discussions which one subsequently had on points which the public Congress had brought out, was not less interesting, and at times even more instructive. I should much like to see a Congress at Bristol one evening during the

Show week, held, say at the University College? The more we can talk about cider the more we shall learn, and the public will at last become interested in this most wholesome and not yet properly appreciated beverage.

In France the Cider Congresses are held at the same time as the Cider Exhibition, viz., in October. There are many advantages in having a Show at this period. The fruit which is going to be used for the production of cider can be shown to perfection, named, classified, tested, and discussed, and is there as an object-lesson to all fruit growers. This portion of the Exhibition at Amiens was excellent. It was an Exhibition to be proud of, and reflected great credit upon every one concerned in its management.

As regards the apples two points struck me, First, some of the varieties were unnamed, showing that in France, as in England, there is still obscurity as to the names of some of the cider varieties grown. Secondly, a large number of the varieties of apples exhibited were infinitely superior in the quality of the juice they yield to the apples grown in England. Thus the specific gravity of the juice of many exhibits ranged from 1.080 to 1.090. In all my experience at Butleigh, I have only found two varieties which would yield so rich a juice.

One other advantage of having the Exhibition in October is that all the cider must be nearly one year old. Now, while one year is sufficient time to enable any cider which will not keep to show its failing, on the other hand, with a cider which will keep, it permits of a full development of both flavour and aroma. At the Show of the Bath and West Society the cider is only four or five months old. Hence, it has not been made long enough to determine its keeping quality, nor has it been in bottle a sufficient time to develop that bouquet which the best cider should possess. Hence, in comparing the exhibits at Amiens with those at the Bath and West Society one was at a disadvantage. There was no question about the more marked flavour of the French cider; it was also characteristic and in the main different from that of the English maker. If the cider section of the Brewers' Exhibition were properly developed it would become comparable with a French Pomological "Concours," and we should then have a better opportunity of comparing the produce of the two countries.

The impression which I formed was that the best French cider was richer and fuller than our best English, probably due to the superiority of the fruit from which it is made. But the poorer cider, drunk by vast numbers of the French people, was of very inferior quality.

Passing to the exhibits of apparatus, &c., there was less of

novelty in these than I had anticipated. What most struck me was the tendency to follow what has been done at Butleigh. Whether this was due to the fact that in France they have been developing along the same lines as ourselves, or that they have knowingly copied us, is of little importance. The similarity remains, and seems to strengthen our position. Thus the system of putting up the pomace in thin layers wrapped in thin cloths was exhibited. The only difference was that in the French press a metal screw passes up through the centre of the bed, so that two layers have to be built up, one on either side of the screw, where with us one suffices to cover the bed of the press. The rotary pump and the filter, as used at Butleigh, were also among the exhibits at Amiens.

The only new apparatus which attracted my special attention was an "apple washer," made by Messrs. Simon Frères, of Cherbourg. My experiments have led me to think that great benefit may accrue from washing the apples, especially in certain seasons. An apparatus for this purpose does not exist in England, and when I had to carry out my experiments in washing apples I found some difficulty in doing this. Messrs. Simon Frères have been experimenting with the object of making a washer which would be effective and not too expensive. Their first apparatus was brought out in 1901, and, as the result of the tests to which it was submitted, an improved form was exhibited at Amiens in 1902. Since the Exhibition further improvements have been made. But I fear these only complicate the machine and add to its cost. The machine which I saw at Amiens was most simple, and, though far from perfect, was yet a very great advance on anything which I had been able to rig up as a makeshift, and would, I think, prove a valuable adjunct to cleanly cider-making, and help to control fermentation.

Passing now to the Congress. Two subjects specially attracted my attention. One was a debate on two articles, dealing with the subject of Pasteurisation. Mons. Edo. P. Monthiers made a thoroughly practical speech on the subject of Pasteurisation, by clarification, which in substance is the method adopted at Butleigh. M. Warcollier discoursed on Pasteurisation by heat, a method of which very little is yet known from the practical point of view. There can, however, be no question that the method is deserving of most careful study, and that it will receive such study in France ere long as I hope it will also in England. It is recognised that to effectually carry out this method the juice after sterilisation will have to be fermented with pure yeasts. And this raises the question, what pure yeasts? An attempt to reply to this question was made by

M. Henri Alliot, the director of the Laboratory of Mons. G. Jacquemin, whose pure cultures of yeast I have frequently mentioned in my Reports on the Butleigh Experiments. But M. Alliot was not convincing. He maintained that the proper yeast to employ was one which had been isolated from fermenting cane-sugar.* It was therefore unfortunate for his theory when M. Andouard rose and said that he was a member of the jury who had to judge the cider exhibits; and that those sent by Messrs. Jacquemin and Alliot, although of excellent quality, had a flavour which caused the jury to come to the conclusion *that the cider had been stored in rum casks.*

Here was convincing support of my experiments which had led me to the conclusion that the yeasts materially affect the flavour of the resulting cider, and that before we can utilise pure cultures we must discover and isolate the best variety of yeast indigenous to the cider fruit of this country. M. Alliot further confirmed the experiments at Butleigh, when he pointed out in his article that the yeasts which gave the best wine fermentation did not give the best cider fermentation.

Limited space will not permit of my entering into further details on this and the many other interesting subjects which were brought before the Congress. The chief impressions left upon my mind were, as I have previously stated, first, that we should hold similar Conferences in England, and secondly, that in spite of all that has been done in France in the past, they are still far from content with the progress made, and recognise the necessity to "work and learn."

XIV.—*Reports upon the Society's Experiments for the Improvement of Permanent Pastures.* By W. ASHCROFT, Steward, and F. J. ROWBOTHAM, Botanical Visitor.

EXPERIMENTAL SITE, AT STOCKBRIDGE, NEAR SHERBORNE,
DORSET.

OWNED by J. K. D. Wingfield-Digby, Esq., M.P., and occupied by Mr. Bird.

The plot in this field was first dressed with Basic Slag in the spring of 1895. In the winter of 1898-99 it received a

* My readers will be aware that in the West Indies the produce of the sugar-cane, which cannot be crystallised and sold as sugar, is fermented, and makes rum.

second application of slag, when the entire field was dressed with the same manure. In August of 1899 a top-dressing of farm-yard manure was supplied to the plot, and in the spring of 1901 it received a third dressing of Basic Slag.

REPORT OF THE BOTANICAL VISITOR.

Date of visit, July 9th, 1902.

The history of this site since the commencement of the experiment has presented many points of interest from time to time. When I inspected the field in 1897, previous to its treatment, the herbage consisted chiefly of Fiorin-grass and Yorkshire Fog, with an abundance of Carnation-grass, Field Wood Rush, Common Rush, Marsh Cudweed, and Buttercup. Hardly any Clovers were visible, whilst Moss was exceedingly prevalent.

Since that year my Reports have chronicled a complete change in the character of the herbage as the result of the manures which have been applied. The first change was noticed in 1899, after the application of Basic Slag during the previous winter. The effects of this dressing were strikingly shown in the almost complete disappearance of Carnation-grass and Rush, and the filling out of the bottom by Clovers.

In the following year these effects were manifested in a far greater degree by the luxuriant growth of Red and White Clovers and Black Medick, together with a lesser quantity of Yellow Suckling. These Leguminosæ formed a dense carpet, displacing the weeds to a very marked extent, and imparting to the field the appearance of a Clover ley.

Last year the herbage appeared to have undergone a further transformation—due to the stimulation of the grasses in excess of the Leguminosæ, although the proportion of the latter was still large.

At the present time the proportion of weeds is much greater than was the case last year, whilst the grasses are not so much in evidence as they then were. The herbage, therefore, on the whole, is less satisfactory, although there is still an abundance of Clovers to be seen. Several of the most objectionable weeds, such as Yellow Rattle and Cudweed, appear, however, to have been permanently reduced by the improved conditions of growth. Some amount of variation in the herbage from year to year was only to be expected, but, after making due allowance for this, I think there is no doubt that the improvement effected by the Basic Slag is of a very substantial nature.

It is of interest to note that the herbage of the small enclosed space affords a complete contrast to that of the rest of

the field. The soil within this space was never slagged, and the herbage was left uncut last year. It is now almost completely occupied by the following grasses:—Golden Oat-grass, Sweet Vernal, Yorkshire Fog, Dog's-tail, Brome-grass, Perennial Rye, Hard Fescue, Smooth Meadow-grass, Quake-grass. With these there are a few plants of Ox-eye, but scarcely any Clovers. It seems probable that this space received the seeds from the grasses which were last year so luxuriant both in the field and on the plot, and that the fine growth of these grasses is partly due to the protection afforded by the wire-netting. The results seem to show that it is possible for the soil to sustain an assemblage of grasses—several of which are of very good quality—under conditions favourable to their growth.

With regard to the plot in this field it will be remembered that it received a dressing of farm-yard manure in August, 1899, following the second application of Basic Slag in the winter of 1898-99, and that this top-dressing had a most remarkable effect upon the grasses in stimulating them to luxuriant growth. In the spring of last year a further application of Basic Slag was made, but the effects of this were not apparent last season, when, also, owing to the remarkable growth of the grasses in the field itself, the contrast between the plot and the field was less marked than it had been in the previous year. At the present time there is much Red Clover to be seen, and far less grass. With the Red Clover there is a heavy growth of Black Medick and Bird's-foot Trefoil, whilst the proportion of weeds is very small.

OTHER BASIC SLAG EXPERIMENTS AT STOCKBRIDGE FARM.

REPORT OF THE BOTANICAL VISITOR.

No. 1.

Date of visit, July 9th, 1902.

This exceedingly poor pasture (originally occupied for the most part by coarse weeds) was slagged in the winter of 1898-99, and the effect of this dressing was to produce a heavy growth of Red and White Clovers, Black Medick, and Bird's-foot Trefoil, with which several good grasses were observed. The improvement is still marked, though the growth is not heavy. On a strip which was manured with dung on the top of the slag a rather fuller growth is to be seen.

It is worth noting, as an essential feature of the improvement, that Carnation-grass and Rush, which formerly abounded in the

field, have entirely disappeared. Mr. Bird also informs me that the quality of the herbage generally has been so far improved that, whereas cattle stocked here were formerly liable to be severely "scoured" through eating the coarse, rushy herbage, this ailment has steadily declined, until at present he has not a single case of it.

No. 2.

The herbage of this field has always been considered to be of rather better quality than that of the preceding field. The effects produced by the application of Basic Slag in the winter of 1898-99 were seen in a luxuriant growth of Red and White Clovers, Black Medick, Hop Trefoil, and Yellow Suckling. This improvement is well maintained at the present time, especially in regard to the plant of Red Clover. The field has, however, been treated in different ways since the original dressing of slag was applied four years ago, and to render this treatment clear I append a rough plan :—

All slagged 1898-9.	Strip A.—Doubly-slagged. Winter 1900-1 (2nd Season).	Strip D.—Slagged 1899-1900. (3rd Season).
	Strip B.—Dunged. Winter 1900-1 (2nd Season).	
	Strip C.—Dunged. Winter 1901-2 (1st Season).	

On Strip A., on which a double turn of Basic Slag was sown in the winter of 1900-1, there is now a heavy growth of Red Clover and Hop Trefoil, which marks it off sharply from the original portion of the field.

Strip B, dressed with Dung, winter of 1900-1, has a heavy growth of grasses—Yorkshire Fog and Golden Oat-grass being specially abundant, and the rest comprising Timothy, Cocksfoot, Dog's-tail, Bent or Fiorin, Sweet Vernal, Hard Fescue, Meadow-grass, and Quake-grass. The last named, which was formerly very abundant in the field, is not nearly so plentiful now, whilst

Rush has quite disappeared. The proportion of Clovers on this strip is not nearly so large as that of the grasses. (It is well to note, in this connection, that this field was originally seeded down with one of Sutton's mixtures, so that probably the presence of so many grasses of good quality at this time may be partly due to this fact.)

Strip C, which was dressed with dung last winter, does not make so good a show at present as the older strip (B).

Strip D, crossing the field, represents the portion left unslagged when the first application was made. This strip was slagged in the winter of 1899-1900, and now bears a very luxuriant plant of Red Clover and Black Medick. On this strip a small portion of the original pasture has been kept hurdled off for comparison. This affords at the present time a very good idea of the extent to which the herbage of the field has undergone improvement. The only Leguminous plant to be seen within the space is Bird's-foot Trefoil, whilst of grasses we have only Hard Fescue, Yorkshire Fog, Dog's-tail, and Couch-grass, with single plants of Timothy and Brome. Many weeds are present, including Agrimony, Buttercup, Ox-eye, Plantain, Flax, Cat's-ear, and Rush.

The success of this experiment may, I think, be regarded as assured, when it is considered that in its original state the field—to quote the words of Mr. Bird—was so poor as not to be worth the rate paid for it.

BASIC SLAG EXPERIMENTS IN THE NEIGHBOURHOOD OF SHERBORNE.

*Site on Mr. Clark's Farm, at Podymore (or Puddimore), near
Ilchester.*

REPORT OF THE BOTANICAL VISITOR.

Date of visit, July 8th, 1902.

The meadow on which Basic Slag has been tried at this farm forms part of a large peaty tract on the Lower Lias formation, contiguous to the River Yeovil, resembling in the character of its soil and herbage much of the land about Sedgemoor. Its flat, low-lying surface renders it very liable to be flooded during wet weather, and to remain under water for considerable periods. Land of this description is naturally capable of producing only the coarsest and rankest vegetation, such as is not only useless, but even hurtful to stock. The herbage of this field consists chiefly of Carnation-grass and Rush, with such grasses as Tall Fescue (about 4 ft. high), Dog's-tail, and Bent, and, of course,

an abundance of Buttercup. It is very satisfactory to note that the Basic Slag, which was sown two years ago, has so far modified the normal herbage as to produce a good bottom of White and Red Clovers.

Site on Mr. Row's Farm, at Podymore (or Puddimore), near Ilchester.

REPORT OF THE BOTANICAL VISITOR.

Date of visit, July 8th, 1902.

Owing to the fact that the entire field was sown with slag, I am unable to detail the constituents of the normal herbage; but I am informed that previous to the manuring, in March, 1901, the condition of the field was such as to render it quite useless for feeding purposes. The soil, which is a heavy clay on the Lower Lias formation, seemed quite incapable of supporting anything more than clumps of coarse herbage, and much of it indeed was perfectly bare of any kind of vegetation. Nothing poorer, or more desperately hopeless, could have been imagined; and as this particular field is only a sample of a good deal of the land hereabouts, the experiment has been invested with considerable local interest.

The transformation in the herbage which has been worked by the Basic Slag is nothing short of marvellous. There is at present a perfectly luxurious growth of Red Clover, White Clover, Hop Trefoil, together with, in lesser proportion, Bird's-foot Trefoil. With the Clovers are associated the following grasses: Dog's-tail, Hard Fescue, and Bent or Fiorin-grass. The Hard Fescue is very abundant, and of such fine growth as to afford good bottom herbage. The proportion of weeds is remarkably small, and no obnoxious plants appear to have been encouraged. The striking nature of this change in the herbage is emphasised by the fact that the present is practically the first season since the manure was applied—that of 1901 having been too dry to permit of any effect being seen. The small proportion of weeds is perhaps to be explained by the fact that at the time the slag was applied the soil was almost uncontested, so that the Clovers were enabled to avail themselves to the fullest extent of the stimulus imparted by the manure, and thus to occupy the soil to the exclusion of the weeds.

I think I may say that in no other case, perhaps, has the renovating value of Basic Slag on poor clay soil been more clearly demonstrated than here. The occupier, who is keenly interested, has further experiments in view on his farm.

Site on Mr. Hawkins' Farm, at Bishop's Caundle.
Ordnance No. 93.

REPORT OF THE BOTANICAL VISITOR.

Date of visit, July 9th, 1902.

The soil is a stiff clay on the Cornbrash. The normal herbage comprises the following plants:—

Grasses.

Golden Oat-grass	..	..	Abundant.
Hard Fescue	..	..	Plentiful.
Dog's-tail	..	..	Plentiful.
Yorkshire Fog	..	..	Not so plentiful.
Cocksfoot	..	..	Here and there.
Quake-grass	..	..	Plentiful.
Bent, or Fiorin	..	..	Plentiful.

Clovers and other Leguminosæ.

Bird's-foot Trefoil	..	..	Abundant.
Hop Trefoil	..	..	Very little.
Red Clover	..	..	Very little.
White Clover	..	..	Very little.

All other Plants.

Wild Carrot	..	..	Abundant.
Cow-parsnip	..	..	Frequent.
Ox-eye Daisy	..	..	Abundant.
Cat's-ear	..	..	Abundant.
Yarrow	..	..	Fairly plentiful.
Common Flax	..	..	Plentiful.
Distant Sedge	..	..	Abundant.
Wood Field-rush	..	..	Plentiful.
Common Rush	..	..	Plentiful.

As will be seen from the above list, this is distinctly a weedy pasture. The soil-exhausting properties of such coarse weeds as Wild Carrot and Cow-parsnip should be noted. The former is exceedingly abundant, as also are Ox-eye and Cat's-ear. It will also be observed what a very small percentage the Clovers bear to the rest of the herbage; unless we include Bird's-foot Trefoil, there are scarcely any true Clovers to be seen in the field. Of the grasses, only two of value—viz., Golden Oat-grass and Hard Fescue—are present in any considerable proportion. Thus, whilst the soil is fairly well occupied, and the herbage offers a foundation for the Basic Slag to work upon, the relative abundance of coarse and worthless weeds renders the need for improvement very manifest.

This is the first season since the Basic Slag was applied, and the evidence already afforded is most striking. There is now to

be seen on the plot an exceedingly fine plant of Clovers, comprising Hop Trefoil, Black Medick, and Red Clover, with a lesser quantity of White Clover. The proportion of Golden Oat-grass is also noticeably increased. On the other hand, the Wild Carrot has almost entirely disappeared, and the rest of the weeds, including Sedge and Rush, have been displaced to a marked extent by the Clovers.

GRASS EXPERIMENTS AT HATHERTON FARM, SAMPFORD.
COURTENAY, N. DEVON.

Owned by the Trustees of St. John's College, Cambridge,
and occupied by Mr. James Searle.

REPORT OF THE BOTANICAL VISITOR. :

Site No. 1.—Lower Moor Field, against Ventown.
Ordnance Map, No. 1247.

Date of visit, June 23rd, 1902.

An area of 6 acres 1 rood 5 perches has been treated
thus :—

Plot A.—2 acres.—Dressed with 10 cwt. Lime per acre.

Plot B.—1 rood 5 perches.—Undressed.

Plot C.—2 acres.—Dressed with 8 cwt. Basic Slag and
10 cwt. Lime per acre.

Plot D.—2 acres.—Dressed with 8 cwt. Basic Slag per
acre.

Date when manures applied, January, 1902.

This experiment has been carried out on an exceedingly poor piece of moorland pasture, the normal herbage of which is such as to be practically worthless for feeding purposes. The soil is a heavy cold clay, of the Carboniferous series, the surface of which is apt to become water-logged during the winter months, and to parch and fissure under the influence of the sun. The presence of the cold surface water until late in the spring naturally prevents the vegetation from making any progress, and by the time evaporation has reduced the quantity of moisture, and thus brought warmth to the roots, the plants begin to suffer from the very opposite cause. Any manure, therefore, not too costly for the farmer's pocket, which would effect some improvement in these conditions, and thus bring about a change for the better in the normal herbage, would be welcomed in this district, of much of the land in which this may be regarded as a fair sample. A short list of the chief

plants present in the pasture will give some idea of the character of the herbage. The natural grasses are: Bent, or *Agrostis*, Dog's-tail, and *Triodia decumbens*—the last named a characteristic moorland grass, of small rigid growth. The weeds include Cudweed, Dwarf Red-rattle, or Lousewort—the latter abundant, and both plants characteristic of boggy ground—together with Hardheads, Cat's-ear, and other *Compositæ*; whilst the presence of Rush and Carnation-sedge (the latter very abundant), with Moss filling the interspaces, suffices to indicate the nature of the soil. The quantity of Clovers and other *Leguminosæ* normally present on the Undressed Plot (B) is so small as to be inappreciable. The growth, in fact, shown on this plot is exceedingly sparse, the soil being evidently incapable of supporting anything more than a stunted and meagre vegetation.

On Plot A, which was dressed with Lime at the rate of 10 cwt. per acre, no improvement—or, at any rate, no material improvement—in the herbage is perceivable at the present time. This, however, is no doubt due to the short time which has elapsed since the Lime was sown; or perhaps, in part, to the fact that the quantity applied was insufficient—it is certainly much less than that which farmers, as a rule, use for liming heavy clay-lands. But one season at least should be allowed for the lime to manifest any marked effect.

Plot C.—It was intended that this plot should be dressed with 8 cwt. Basic Slag and 10 cwt. Lime to the acre; but I am informed that there was not sufficient lime to do more than a few rows of the plot. For practical purposes, therefore, the plot may be taken as having been dressed with Basic Slag alone. The improvement in the herbage worked by the manure is very marked. The Moss has largely disappeared (a fact which has been noted in other districts as the result of the Society's Basic Slag trials), and the weeds, sedges, and rushes have likewise gone under; and in their place we have a good bottom of Clovers, including under this term the following *Leguminosæ* in varying proportions:—

White Clover (<i>Trifolium repens</i>)	.. ..	Abundant.
Red Clover (<i>T. pratense</i>)	.. ..	Not plentiful.
Suckling Clover (<i>T. minus</i>)	.. ..	Plentiful.
Black Medick (<i>Medicago lupulina</i>)	.. ..	Plentiful.
Bird's-foot Trefoil (<i>Lotus corniculatus</i>)	.. ..	Plentiful.
Greater Bird's-foot Trefoil (<i>L. uliginosus</i>)	.. ..	Fairly plentiful.

As a result of the field having been stocked, none of the Clover has been allowed to attain to any height, for, naturally enough in a pasture where feed has hitherto been so scarce, the stock have cropped every patch of Clover as closely as possible.

In the small hurdled off space, however, one can form an idea of the actual extent to which the plants have benefited by the slag. As in other experiments carried out on poor lands, we here see that the chief plant to derive benefit from the treatment is the White Clover. My experience has shown me, however, that, where normally present in the pasture, Bird's-foot Trefoil and the Black Medick (often, but erroneously, termed "Hop" Trefoil), and, with the latter, Suckling Clover, have always benefited in a very marked degree by the application of Basic Slag.

Plot D, which was dressed with Basic Slag alone, at the rate of 8 cwt. per acre, does not exhibit such marked improvement as that observed on Plot C; but this is to be accounted for perhaps by the fact that the soil of this portion of the field is of even poorer character than that of the rest. It is characteristic of these moorland pastures to exhibit considerable variation in soil conditions within comparatively small areas—the question of "better" or "poorer" often depending upon the declivity of the surface.

Having regard to the coldness of the spring of the present year, the improvement already noted is, I think, the more remarkable; and there is every reason to assume that it will be even more marked next year. So far as it has gone, however, the experiment must be regarded as a distinctly successful attempt to convert a practically worthless piece of pasture (and one which, it should be borne in mind, is typical of a large district) into land capable of yielding a comparatively fair amount of nutritious herbage. In this connection it may be noted that hitherto, owing to the wetness of the soil, it has been found impracticable to place sheep on this field. I may add that, according to my information, the qualities of Basic Slag appear to be almost unknown in this district, so that this particular experiment derives additional importance as a useful object lesson to the farmers of this part of North Devon. Up to the present the sole panacea for poor grass-land hereabouts has been the costly, and often unattainable, farm-yard manure.

*Site No. 2.—Claypark Field, adjoining Hatherton Lane.
Ordnance Map, No. 1309.*

REPORT OF THE BOTANICAL VISITOR.

Date of visit, June 24th, 1902.

An area of 7 acres has been treated thus:—

Plot A.—2 acres.—Dressed with 10 cwt. of Lime per acre.

Plot B.—1 acre.—Undressed.

Plot C.—2 acres.—Dressed with 8 cwt. of Basic Slag and 10 cwt. of Lime per acre.

Plot D.—2 acres.—Dressed with 8 cwt. of Basic Slag per acre.

Date when manures applied, January, 1902.

This is normally a much better pasture than the preceding, and, having a considerable slope to the south, the surface is better drained and consequently warmer. Otherwise I believe the soil conditions are very similar. The natural herbage includes the following grasses:—

Perennial Rye	..	..	..	..	{ By far the most abundant grass in the field.
Dog's-tail	..	..	..	..
Timothy	..	..	..	..	Plentiful.
Yorkshire Fog	..	..	..	..	Plentiful.
Hard Fescue	..	..	..	..	Plentiful.
Bent, or Fiorin	..	..	..	..	Plentiful.

The Clovers and other Leguminosæ comprise:—

White Clover	..	..	..	..	Abundant.
Red Clover	..	..	..	..	Not much.
Suckling Clover	..	..	..	..	Abundant.
Black Medick	..	..	..	..	Abundant.
Bird's-foot Trefoil	..	..	..	..	Not so plentiful.

With the above there is a little Rib-grass and Yarrow, and a fair sprinkling of useless weeds, but it will be seen at once that the herbage of this pasture represents a far more valuable whole than does that of the preceding site. This is partly to be explained, no doubt, by the fact that the land was originally seeded down about twelve years ago, and, although it has gone back a good deal, it is hardly to be placed in the same category as those moorland fields which have not been so treated; the difference may also be partly due, as previously mentioned, to the slope and aspect of the surface. The grasses are not only more numerous in kind, but of much better quality, and exist in far greater abundance relatively to the rest of the herbage, whilst with the grasses there is normally a fair bottom of Clovers. The absence of plants distinctively indicative of marshy conditions of soil is also noticeable. The need for improvement is, however, plainly shown by the stunted and starved condition of the majority of the plants.

Plot A, dressed with 10 cwt. of Lime to the acre, shows no material difference in its herbage from the Normal Plot, and this possibly for the reasons stated in regard to the preceding experiment.

On Plot C, dressed with Basic Slag 8 cwt. and Lime 10 cwt. to the acre, the stimulus imparted to the Clovers—and especially to the White Clover, Black Medick, and Suckling Clover—is very marked, there being a very fine head of all three plants to be seen. The Bird's-foot Trefoil has also been stimulated, as was only to be expected. Of the grasses the relative quantity of Hard Fescue has apparently been greatly increased, as a result, probably, of the Lime dressing. With these improvements in the herbage there is a noticeable decrease in the proportion of weeds, and the entire bottom seems to be well filled with nutritious herbage. The contrast in point of luxuriance of the vegetation between this plot and that which has been left undressed, is such as to afford distinct encouragement to the instigators of the experiment.

Plot D, dressed with Basic Slag alone. The growth here is very good; but, owing to deterioration of soil on this side of the field, it is not quite so luxuriant as on Plot C. Smooth Meadow-grass is, however, very plentiful on this plot.

One-half of this plot has been hurdled off for mowing, the other half having been stocked.

I am glad to note, in conclusion, the intelligent interest which is taken in the experiments by the occupier, Mr. James Searle. It is, I believe, rare to find a farmer of these moorland farms, where practice is necessarily of a somewhat rough-and-ready character, evincing so much interest in his land as to know the names, and something about the habits as well, of the humbler plants which grow upon it. A good word should also be said for the sub-Agent of the estate, Mr. J. E. Ward, who has spared no pains in marking out the sites, and who is very anxious for the success of the experiments.

In addition to the foregoing, I inspected several experiments on a small scale which Mr. Searle has carried out on different parts of his farm. In two fields of very poor description Basic Slag has been tried with distinct success, in regard both to the encouragement of such Clovers as are normally present and to the elimination of weeds and moss. It is important to record that in all these cases the experiments have been tried on land which is little better than moor—a fact which renders the results so far attained of additional value. Naturally enough, the lesson which they are capable of imparting has not yet been fully taken to heart by the farmers of the district. Mr. Searle exhibited to me with evident pride a field which he had top-dressed with dung; but, although there was no denying the heaviness of growth which the dung had produced, it was equally clear that this manure had (as has been observed elsewhere, and, indeed, generally, in the course of the Society's

experiments) brought on everything—weeds as well as grasses and clovers—to an equal degree, so that, while granting the abundance, there was no denying the coarseness of the resultant herbage. This nail ought to be driven home, because one of the main benefits conferred by the Basic Slag is unquestionably its *selective* power as regards the constituents of the pasture which are admittedly the most nutritious. Whether Basic Slag really discourages certain plants is not a question which need trouble the farmer, so long as he is assured that it encourages the best at the expense of the least useful and the obnoxious constituents of the herbage. This is, as I venture to think, one of the chief results which the Society's Experiments have clearly brought out, and its value is such that it could hardly be less even if—which is far from being the case—farm-yard manure were as available or as inexpensive as Basic Slag.

EXPERIMENTAL SITE AT WEST GRINSTEAD, SUSSEX.

Owned by Rev. J. Goring, and occupied by Mr. John Reeve, of Champions, West Grinstead, Horsham, Sussex.

REPORT BY THE STEWARD.

A turn in fortune's wheel which favoured this site in 1902, and, like many other places, it rejoiced in a season when grass came early and strong.

After a long series of seasons, beginning with 1893, which have for the most part, especially in this corner of Sussex, been dry ones, a growing early summer is something longed for.

Since the manures were first applied in 1895 to the old site at Champions Farm, particulars as to their effects have, from time to time, been given in annual issues of the Society's Journal, and it is only necessary now to call attention to one fact, and that a very important one. If we may take the site—as I think we may—as a fair sample of the clays of the Weald, the experiment strongly testifies to the lasting effect of Basic Slag upon such soils. When the Society first started this experiment in 1895, the tenant pointed out to me some lands to which Basic Slag had been applied several years before. At that time they showed, as they have always done since, the effects of the application, thus bearing striking testimony to the efficacy of Basic Slag on such land.

The site of the Society's experiment, commenced seven years ago, confirms this entirely. There is now no evidence of the very good dressing of dung, or of the dressing of Lime (which

latter has never shown any very satisfactory result) then applied, and the same must also be said of the application and re-application of the superphosphate, and the superphosphate and Kainit. The Basic Slag Plots are, however, still to the fore, and—though the field was being grazed and had been very closely fed—could be easily picked out by means of the larger quantity of small Clovers in their bottom, and by the fresher and more vigorous grass.

“Danesfold Six-acres” Field.

In 1898 half an acre of this field was dressed with 8 cwt. of Basic Slag to the acre, and two years later the whole of the field, with the exception of two strips (about half an acre in all), was similarly treated. The effect produced by the slag in previous years was enhanced by the season, though the undressed strips showed improvement from the same cause.

Comparing the portion dressed two years ago with that dressed four years ago, the only difference calling for remark was the increased growth of Cow-grass Clover on the former.

“Patches” Field.

In Patches field, where a half acre plot had been treated in 1898 with a similar quantity of slag to that applied to the field just mentioned, one could easily track the plot all round by the character and colour of the herbage and increased growth of small Clovers.

“Newlands” Field.

In this large poor field of 16 acres, where the landlord (the Rev. J. Goring) had allowed the tenant half the cost, and where in the winter of 1900–01, 8 cwt. of Basic Slag over one-half, and 4 cwt. over the other half of the field had been applied, the benefit of the manure was also strongly brought out by the season.

The unmanured strips in this field showed more poverty than in the last, and exhibited a greater contrast to the rest of the field than did those in the Danesfold field. One of the most interesting evidences of what Basic Slag could effect was seen on the headland. As a rule, if any better herbage is to be found on a wretchedly poor field, it is generally on the headland under the shelter of the hedge, but here on the headland the ground was thick with Clovers, &c., where the drill had been wheeled round when the manure was drilled on; but where the drill had not touched the ground nearer the hedge, the normal state of poverty and bareness showed what was wanted. Of

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course, if the tenant had not forgotten to finish off properly, but had gone round the field with the drill, such a good object lesson would have been lost.

The two strips that were drilled with Homco Rape-meal in the winter of 1901-02, in order to add a nitrogenous manure to the Basic Slag dressing, did not show any marked improvement for the application.

EXPERIMENTAL SITE AT TALATON, OTTERY ST. MARY, DEVON.

Owned by Sir John Kennaway, Bart., and occupied by Mr. Geo. Daw, of Larkbeare Farm, Ottery St. Mary.

REPORT BY THE STEWARD.

Here, as at West Grinstead, the effect of a growing summer was simply to bring out the benefit of the application of Basic Slag on the three poor wet fields to which it had been applied at the rate of 8 cwt. to the acre in December, 1897, and again with a half-dressing in December, 1899.

The portions so treated were—

- 1 acre. North Pit Park Field.
- $\frac{1}{2}$ acre. Broad Park.
- $\frac{1}{2}$ acre. Fulleyford.

Subsequently the whole of the Fulleyford field, with the exception of one small strip, was dressed in December, 1900.

Though the original plot in this field still had the advantage, the whole of the field showed wonderful improvement. This is an interesting field, in that it shows the ameliorating effect of Basic Slag on a close grassy bottom, though the grass is principally the most worthless form of *Agrostis*. On the other two fields here, and in very poor fields elsewhere which are distinguished by a "presence of weeds and an absence of anything else," the effect of slag is to bring up Clovers and Leguminous herbage generally. In this field, although where there was at the start a coarse grassy bottom, the small Clovers are encouraged, but the best effect is perhaps shown in the turning of a coarse rusty-looking bottom, not liked and hardly grazed, into a fresh green, well-cropped stool of grass.

XV.—*Report of an Experiment for Ascertaining the Influence of Various Manures upon the Production of Mutton.*

By W. ASHCROFT, Steward.

FULL details and report of the conduct of this experiment during the summer of 1902, with the monthly gains of the sheep on each plot, &c., have been furnished to the Board of Agriculture, and, by the courtesy of the latter, have been circulated among the members of the Society's Experiments Committee.

Readers of the Society's 'Journal' may remember that in the last issue, page 182, vol. xii., a hope was expressed that after another summer there would be some interesting information to give to the public, as the Board of Agriculture were assisting in the conduct of experiments upon similar lines on about twelve other sites.

The Board, however, deem it desirable that further confirmation shall be awaited before any definite statement of results is made.

The following general remarks, not bearing on a comparison of the plots, may be made. As last year, the plots were stocked with Hampshire Downs and half-breds (Shropshire and Kent), fifty of the former and sixty of the latter being purchased; the season was such a growing one, a few more of the former had to be purchased later on.

The Hampshire Downs were all in useful store condition, and the half-breds, though some were a little fresher than others, could be similarly classified, and were well suited for the purpose.

When weighed in the wool the Downs averaged 92·8 lbs., and the half-breds 93·6 lbs., so that in point of size they were nearly level. It may be remembered that in 1901 the Downs were the bigger and fresher sheep of the two, and that during the course of the experiment the half-breds increased considerably more in live weight than did the Downs. In 1902 the fifty-five half-breds (five to a plot) and the forty-four Downs (four to a plot), which were put on together at first and were on the plots the whole of the twenty weeks, were more equal in condition, and the increase in weight was almost identical. On some plots the Downs did slightly the best, and *vice versa*, the average increase of the fifty-five half-breds being 47·5 lbs. per head, and of the forty-four Downs 47·2 lbs. per head.

The season was an early one, and the sheep were put on the plots on the 25th April, three weeks earlier than in the previous year. Nine sheep (*viz.*, five half-breds and four Downs) were at first put on each plot, but the grass grew so fast on all the manured plots that it was found necessary at the weighing in

May to put another sheep on each of the plots, with the exception of the two unmanured plots and the lime plot. During June the grass grew still more rapidly, and at the weighing on 21st June two more sheep were added to each plot, with the exception of the three above mentioned.

From the preceding paragraph it may easily be inferred that the season of 1902 was quite different in character to the two previous ones. Grass came much earlier and grew very rapidly, so rapidly in June that it was quite impossible for the sheep to keep it down, and when the sub-plots were cut, on June 21st, there was quite a fair cut of grass on all the plots, with the exception of the lime and the two unmanured plots. The same rapid growth prevailed all through the season, and a striking proof of this is shown by the average weight of the grass on the sub-plots of a twentieth of an acre, which in 1901 was 98 lbs., and in 1902, 662 lbs.

From the first and during the whole season, the most important difference was the increased and better herbage on all the manured plots, as compared with the two unmanured ones; there was no increased growth on the lime plot, but a much improved bottom with more clover. The amount of trefoil and small clovers on the various slag, superphosphate, and dissolved bones plots was extraordinary; the crop on the plot heavily dressed with slag being decidedly the heaviest and thickest.

In view of the fact that this is the second season since the manures were applied, and that sheep are commonly supposed to do rather better when the grass has not grown too fast for them and can be kept fairly short, and also that on the two untreated plots there was always plenty of grass, so that the sheep were never stinted, it is satisfactory to note that the increased nutritive value of the grass on the manured plots over that of the untreated ones was well shown in the gain in weight made by the sheep. This was not brought out to any appreciable extent in the dry summer of 1901. To illustrate this, and without taking into account the weights gained by the extra sheep put on the manured plots in 1902, we may compare the increases made on the untreated plots in 1901 and 1902 with the increases made on the manured plots.

Nine sheep were put on all the plots at the beginning of the experiment during both seasons and remained there twenty weeks. In 1901 the average increase per head of the nine on the two untreated plots during that time was 33 lbs., and on the manured plots 35.2 lbs.

In 1902 the average increase for the same number of sheep on the untreated plots was 40.6 lbs., and on the manured 48.8 lbs. per head.

This additional weight was also accompanied by an increase of quality, as out of the 120 sheep on the plots at the last weighing, ninety-five were fit to be killed, and were sold to the butcher by weight at $8\frac{1}{2}d.$ per lb. Markets were fairly in our favour, and the difference between the purchase and sale of the sheep this year came to the satisfactory figure of 52*l.* 13*s.* 6*d.*, despite the fact that we lost one sheep, and that two others had to be slaughtered.

We had no lameness, and although the prevalence of fly from the middle of August to the middle of September caused the sheep to do extremely badly, they made a fair increase all through the time, with the exception of the four weeks just mentioned. In accordance with previous experience, and as might naturally be expected with sheep kept for so long without change, the gain in live weight was made very largely in the first three months, when it must also be remembered the grass is at its best.

XVI.—*Report upon the Society's Experiments with respect to the cause of Teartness of Land.* By the Chairman of the Experiments' Committee (Sir C. T. D. ACLAND, Bart.), Dr. GEO. NEWMAN, and the Society's Consulting Chemist (Dr. J. A. VOELCKER, M.A., F.I.C., &c.).

THE CHAIRMAN'S REPORT.

A FEW years ago, the Bath and West and Southern Counties Society instituted an investigation into the causes of what is called "teartness of land," by which is meant a peculiarity existing in some pastures, producing very destructive scouring in cows and bullocks, and occurring chiefly, it is said, on certain lands watered by the River Yeo, and on the lower Lias formation.

The subject had previously attracted the attention of the late Professor Voelcker—the distinguished father of the Society's present Consulting Chemist—who embodied the conclusions at which he had arrived in an article contributed to Vol. X. (1862) of the Society's annual 'Journal.' He formed the opinion that the scouring was, to some extent, due to the immaturity of the grass consumed upon those lands at the times of year when "teartness" is most destructive.

When recently the attention of the Society was again directed to the subject, it was thought that possibly the great advance in the Science of Bacteriology which had taken place

since Dr. Voelcker's Report was published might help to throw some additional light upon the question. Accordingly, Dr. George Newman, who at that time was engaged upon bacteriological work at King's College, London, was asked and consented to undertake an investigation.

Samples of the herbage from the so-called "teart" land, situated near Yeovilton, Ilchester, Somerset, were sent to him for this purpose, and having visited the district from which these had been sent, he wrote a Report recording his conclusions. The Society's Consulting Chemist (Dr. J. A. Voelcker), who was in consultation with Dr. Newman, saw no reason for dissenting from those conclusions.

The drought of 1900 and 1901 apparently diminished the "teartness" of the land in the affected district to such an extent as to interfere with the obtaining of any further results at that time. During the last autumn, however, the soil, owing to the wet weather, became much more full of moisture, and there appeared to be a recrudescence of the disease. Mr. Rawlence drew the attention of the Experiments' Committee to this fact, and the investigation was resumed.

Certain animals were slaughtered, and sent for examination to Professor McFadyean, of the Royal Veterinary College, who reported that the symptoms exhibited were familiar to him as indicating "parasitic gastritis," a disease of not infrequent occurrence in other parts of England. This statement seemed entirely consistent with the conclusions arrived at by Dr. Newman, and suggested that the source of the evil must be looked for in some cause other than bacterial.

Simultaneously with the examination carried on by Professor McFadyean, Dr. Voelcker had instituted a very careful comparative chemical analysis of the grasses grown on "teart" and on sound land in the district referred to. The remarkable results obtained by him go far to support the conclusions stated by the late Professor Voelcker, and set out in the Report which has been already mentioned. They also afford good reason for believing that further light may be thrown upon the subject, if a similar but possibly somewhat wider and more prolonged investigation be carried out in the coming season.

The following Reports by Dr. Newman and Dr. Voelcker respectively are of interest as showing the lines of the investigation which has been pursued. The Report of Professor McFadyean is not given, as it dealt only with the nature, and not with the origin, of the disease, or the circumstances under which it has been produced in the special district which is affected in the peculiar way called "teartness." We cannot, however, omit a hearty expression of thanks for the kind willingness with

which the Professor carried out a thorough examination of the materials sent to him, and for the fulness with which he entered into the questions put to him.

DR. NEWMAN'S REPORT.

On October 25, 1902, I was able to pay a visit to Ilchester to inspect the teart land and the animals affected by it.

I was met by Mr. Spiller, who rendered me every assistance. He has been at Hainbury Mill, I understand, for nearly two years, and for fifteen years previously occupied the Northover Mill adjoining. Mr. Spiller is a miller, and not a farmer in the ordinary sense of the term. He occupies some 25 acres at Hainbury, which was about the acreage of Northover also. On both places he has kept cattle. He states that at Northover, although only half a mile distant from Hainbury, he was never troubled with teart land. At Hainbury he keeps some ten or a dozen head of cattle, half a dozen horses, and some fifty sheep. About last April he purchased at the Taunton market three Devon steers for about 10*l.* 10*s.* each, and placed all three of them on the same land. No. 1 began in the course of a few days to scour, accordingly Mr. Spiller, immediately he observed that Nos. 2 and 3 had also begun to scour, removed them on to other land adjoining. No. 1 was left on the teart land, and was "fed on cake, chaff, and meal to get him better." The animal was still allowed to graze on the teart land. Scouring continued in No. 1, but discontinued in Nos. 2 and 3. He had also a "dry" cow, which, though it fed on teart land, did not scour, "but," said Mr. Spiller, "would have scoured if it had been in-milk." I accept the statements concerning the cow with reserve. The other animals, with the exception of the sheep, were not fed on the teart land, and did not scour. All the animals, without any exception, drink the same water which is derived from the River Yeo, an ample stream of running water.

With regard to the condition of steer No. 1, which was the only animal on the place which was scouring in any marked degree, I made a number of inquiries. The main facts about the beast are five:—

1. It was scouring—brownish-green fluid scour.
2. Very dirty legs and hind quarters.
3. A ragged tail—which Mr. Spiller held to be a pathognomic sign of scouring.
4. Considerable emaciation of hind quarters.
5. Change of colour—the well-known dark brown of a Devon steer had changed to an ochre-brown.

I formed the opinion, after careful examination of the animal, that there was little else to observe, and that the animal was not so ill as the cattle I saw at Yeovilton in 1897. Mr. Spiller said that the animal would now only be worth some 6*l.* or 7*l.*; had lost 1 cwt. in weight, although its frame was bigger than when he first had it, and that if fed on teart land for a fortnight more would be dead. I assert, without hesitation, that the scouring was very much less than in the cattle at Yeovilton.

Mr. Spiller also drew my attention to the sheep, which he said were scouring. After a careful inspection, we found one nine months lamb which Mr. Spiller declared was scouring. Its hind quarters were in a great mess. But I am bound to say that I saw no great evidence of the sheep being directly affected by the teart land, although grazing on it. On pointing this out to Mr. Spiller, he said that they had been frequently moved on to non-teart land. The teart land had no effect whatever upon the horses.

Next I examined the land, teart and non-teart. The river Yeo runs in between two pieces of land, which are flat and low and often flooded, and always used for grazing. This is non-teart. The other land is divisible into two parts. One part, low and flat, and used for grazing, is non-teart. The other part (say five acres) is *rising ground*, never flooded by the Yeo, and put up for hay every year. This is the teart land. I also went over several fields with Mr. Spiller to see a nine-acre field which he said was also scouring land. It was rising ground, never flooded, and put up for hay.

With respect to the teart field, Mr. Spiller states that this field was put up for hay, cut in June, and the steers turned on to it in July, when, after two or three days, they commenced scouring. Mr. Spiller said to me: "If they had been turned on in May they would have scoured." Mr. Spiller also said that he, and others in the same district, had found that two things were always true about the teart land. First, that it affected young animals most. Secondly, that land only became teart in a wet autumn, and when there was a very strong growth of second or aftermath grass.

None of this teart land, either in the five-acre field or the nine-acre one, scoured last season, which was dry, and there was not a strong growth of after-math. Mr. Spiller knows of no evidence or reason to suppose that hay from teart land scours. I was informed at Yeovilton that such hay *did* scour.

Since 1897, I have given a good deal of thought from time to time to this question of teart land. I have carefully considered my notes taken at Yeovilton in 1897, at Butleigh Court in 1899, and on the present occasion; and I have, of

course, also thought about the reports by the late Dr. Voelcker and others. Generally speaking, I am of opinion that the question is one of *grass*, and that immature grass, of strong growth, growing on certain soils, produces the scouring. I do not think the drinking water has anything to do with the matter. It is difficult to be more precise at the present juncture, and I must say that the difficulties are increased by the unreliability of the evidence obtainable from farmers who have experienced trouble from teartness of land.

We want some facts on the following points :—

- (a.) Does hay from teart land scour ?
- (b.) Does young grass in the spring scour like young grass in the autumn on the same lands ?
- (c.) If a bullock were fed on grass *only* would it scour ?
- (d.) If a bullock were fed with *soil* from teart land mixed with its food would it scour ?
- (e.) Is there any substantial evidence that sheep scour on teart land ?
- (f.) Is it a fact that dry milch cows do not scour, whereas those in-milk would scour on teart land ?

In the three cases I have visited, although I made the most careful inquiries, I have not been able to obtain really reliable information upon these points, yet such information seems to me to be necessary in order to make further inquiry of much value; and I cannot but feel that if the Experiments' Committee could collect *absolutely reliable evidence* on these points, by means of several simple experiments, a great step forward would be gained, and the available and necessary ground to cover by chemistry or bacteriology would be reduced to practicable limits. At present, the evidence obtainable is so conflicting that it is useless as a basis of work.

I am not prepared to advise the slaughtering and *post mortem* examination of the scouring steer at Hainbury Mill. I do not think that much information of value would be so obtained. Signs of acute enteritis and emaciation would be forthcoming, but that we know already. Nor do I think a bacteriological examination of the blood, urine, or excreta would yield valuable results. I should prefer that Mr. Spiller should select a small part of the worst teart land he can find, rail it in, and obtain a little hay from it. This might be kept till next season and an animal fed on it. If it scours then a most thorough and systematic analysis should be made of that hay—for in it, somewhere, is the causal agent. But at present we do not know exactly where to concentrate our efforts, and to examine on every side is an endless effort.

Next spring Mr. Spiller might also test the theory that young grass on teart land in the spring will scour—about which I think there is some doubt. And by such simple but *most strictly supervised* experiments we should obtain some facts. At present, I must admit, one has to base one's views on opinion and a great deal of untrained observation.

I have retained a number of samples of teart grass and non-teart grass—as far as Mr. Spiller could guide me to distinguish them—ready for bacteriological examination, if the Committee would like me to proceed to make such examination.*

I have to express my thanks for the courteous assistance of Mr. Rawlence, of Sherborne, in making all arrangements for my visit.

THE CONSULTING CHEMIST'S REPORT.

In connection with the Society's Experiments on "teart" land, I have to report that, in the month of November, 1902, I received from Mr. Rawlence a sample of water and samples of grass from two different fields, one being land where cattle do not "scour," the other an adjoining field which is considered "teart," and in which a bullock affected with scouring had been feeding.

The water was that from the river, and the cattle from both the above fields had access to it.

The water I submitted to a partial analysis. On evaporation to dryness, it gave a residue amounting to 29·40 grains per gallon. There was nothing of exceptional nature in this water; the amount of total solids was in no way excessive, nor were there saline or purging salts in any quantity.

I think, therefore, that the quality of the water has not in this case anything to do with the question of scouring.

The samples of grass were received in the natural, undried, condition, and the quantity of each was about 2 lbs. There was no marked difference, so far as I could tell, in the herbage of the two lots.

Determinations of the moisture were made in each, and gave:—

	Grass from Sound Land.	Grass from Teart Land.
Moisture per cent.	79·63	66·44

* Dr. Newman has since reported that he made some preliminary experiments with these grasses, culturing in broth and milk, and that *Bacillus enteritidis sporogenes*, the organism commonly held to be causally associated with epidemic diarrhoea, was not present.

Determinations were next made of the total nitrogen, the albuminoid nitrogen, nitrogen as nitrates, and of acidity both total and fixed. To render the results comparable, these are given as reckoned on the grass in its dried (moisture-free) state, whereby the actual comparative compositions of the samples are shown. These results were:—

(In grass dried at 212° F)	Grass from Sound Land.	Grass from Teart Land.
	per cent.	per cent.
Total Nitrogen	3·57	1·89
Albumoid Nitrogen	2·41	1·20
Nitrogen as Nitric Acid	·0107	·010
Total Acidity	·088	·104
Non-volatile Acidity	·039	·100

It will be seen that the grass from the “sound” land is much richer in nitrogen than that from the “teart” land; it also has a great deal more nitrogen existing in the form of albuminoids. The proportions of nitrates are in each case small, but there is a marked difference as regards acidity; that of the “teart” land grass is not only higher than that of the “sound” land grass, but the whole of it is practically fixed (or non-volatile) acidity; whereas, with the sound grass, less than one-half the total acidity is of the non-volatile kind. This may have, I think, some bearing on the question of relative maturity, and the results now obtained seem to bear distinctly in the direction of the “teart” land grass being less mature than the other, and its immature condition may be responsible, in measure, for the scouring.

At the same time, the results are not sufficiently definite, nor the samples examined sufficient, as yet, to come to a clear conclusion; but it would be desirable, I think, that inquiries be continued in this direction.

XVII.—*The Society's Dairy Schools.* By THOS. F. PLOWMAN,
Secretary and Editor.

TEACHING SECTION.

A CHEESE School has been carried on by the Society during the past year, on behalf of the Somerset County Council, at Mark House, Mark, near Highbridge, the occupier being Mr. J. Peters.

The usual arrangements were made with the tenant for the use and control of his dairy, the supply of milk from his cows, and the boarding and lodging of Students in his house. The School, as in previous years, was supervised by Mr. G. Gibbons, the Society's Dairy Schools' Steward, and the teacher was Miss Emma Cannon.

The following Table shows the number of Students at the Society's Cheese Schools from the date of their establishment until the present time.

County.	Centre.	No. of days School was open.	Year.	No. of Students.						
				4 weeks, and over.	3 weeks.	2 weeks.	1 week.	Shorter Periods.	Total.	
Somerset	Wells	184	1890	5	1	6	51	28	91	
"	Frome	229	1891	12	1	12	32	9	66	
"	Axbridge	214	1892	14	..	5	18	2	39	
"	Butleigh	214	1893	24	..	3	15	2	44	
"	Mark	214	1894	16	..	4	22	1	43	
"	Haselbury	214	1895	30	..	..	8	4	42
"	Cossington	214	1896	11	..	3	8	..	22	
Dorset	{Milton (near Gil- lingham) .. }	209	1896	22	1	3	6	..	32	
Somerset	Long Ashton ..	214	1897	16	..	5	4	..	25	
"	ditto	214	1898	19	1	1	14	2	37	
"	Pylle	214	1899	10	..	6	17	5	38	
"	Batcombe	219	1900	16	..	3	16	..	35	
"	Hambridge	214	1901	12	..	2	3	..	17	
"	Mark	214	1902	15	..	3	11	7	36	
	Total .. ..	..	..	222	4	56	225	60	567

The Table opposite shows the quantity of Cheddar cheese made in 1902, and the prices realised; Messrs. Hill Bros., of Evercreech, being as usual the buyers.

At the termination, on October 31st, of the instruction in Cheddar cheese-making, the School was, at the request of the Somerset County Education Committee, kept open for another

Date.	Place.	Number of Dairies.	Weight of Green Cheese.	Weight of Cheese when sold.	Total Weight of Cheese sold.	Shrinkage.	Average age of Cheese when sold.	Price per 112 lbs.	Milk used.	Average price per 112 lbs. of the year's output.
			cwt. qrs. lbs.	cwt. qrs. lbs.	cwt. qrs. lbs.	per cent.		s. d.	galls.	s. d.
1902	Mark	First (April 1 to 30)	26 2 24	24 3 13	208 0 6	7	..	64 0	2,921	66 9
"	"	Second (May 1 to 31)	38 1 5	35 8 17		6½	13 weeks	66 0	4,232	
"	"	Third (June 1 to 30)	37 2 10	34 8 17		7	13 "	66 0	4,078	
"	"	Fourth (July 1 to 30)	34 3 15	32 2 19		6½	14 "	66 0	3,848	
"	"	Fifth (Aug. 1 to 31)	31 0 4	28 3 6		7	16 "	68 0	3,239	
"	"	Sixth (Sept. 1 to Oct. 31)	49 1 6	45 3 18		7	14 "	70 0	4,765	
		Total	217 3 8	208 0 6					23,083	

month for the teaching of Caerphilly cheese-making, and eleven Students, each of whom received a week's instruction, attended.

Since the establishment of the Butter and Cheese Schools in 1888 and up to the end of 1902, the Society has, in conjunction with County Councils and other public bodies for whom it has acted, expended the sum of 28,517*l.* in the promotion of technical instruction in dairying through the medium of these Schools. Even this sum by no means represents the total expenditure, for it does not include the cost of hiring and fitting up buildings for the travelling Butter Schools, and other liabilities undertaken by local bodies—such as the County and District Committees—co-operating with the Society.

The School will be re-opened for the season of 1903 on April 1st, at the Manor Farm, Woolston, North Cadbury. The premises, which are in the occupation of Mr. J. Farthing, are suitable and commodious, and there is ample provision at the residence attached to the farm for the comfortable boarding and lodging of Students.

The farm is three miles distant from Castle Cary railway station, and four miles from Wincanton railway station, and Mr. Farthing will arrange for a vehicle to meet the train if Students will communicate with him beforehand. The charge per journey, either way, will be 2*s.* for one Student, and 1*s.* 6*d.* each for more than one on the same journey.

Miss Emma Cannon, whose make of cheese at last year's School was excellent, will continue to be the teacher.

The fees (payable in advance) are as follows :—

	Residents in Somerset.			Non-Residents.		
	£	s.	d.	£	s.	d.
For the first week (with board and lodging)	1	10	0	2	0	0
“ second week “ “	1	7	6	1	15	0
“ third week “ “	1	2	6	1	10	0
“ fourth week “ “	1	0	0	1	1	0
Fee for complete Course of four weeks “	5	0	0	6	6	0

Day Students (at a charge of 10*s.* 6*d.*, including board and lodging) will be admitted only when the School is not full of other Students.

Students who have previously attended the School for not less than a month are admitted at a reduced fee of 5*s.* for one day's instruction ; 4*s.* per day for any other period less than a week ; 25*s.* per week for any other period less than a month, and 4*l.* for one month. For day Students these fees include board, and for all other Students board and lodging.

The School will be closed for the season on October 31st, 1903.

The Somerset County Education Committee offer twenty Studentships, tenable at the School, of the value of 2*l.* 10*s.* each, being half the fee for a full course of four weeks' instruction, so that the cost to the holder of a Studentship will be only 2*l.* 10*s.* for a month's instruction, with board and lodging. In very special circumstances the fee may be still further reduced. Applications respecting Studentships should be made to Mr. C. H. Bothamley, Director of Technical Instruction, Weston-super-Mare.

At the Society's Annual Exhibition, which opens on May 27 next at Bristol, Prizes (particulars of which will be found on page 108 of the Appendix to this volume) will be given for Cheese made by Students who have attended not less than four consecutive weeks' instruction at any of the Society's Schools since 1899.

RESEARCH SECTION.

Mr. F. J. Lloyd, F.C.S., is conducting, on behalf of the Society, an investigation into the origin and cause of flavour in dairy produce.

The investigation, which was commenced in 1901, will extend over a period of three years, the cost of it being defrayed by grants from the Board of Agriculture, the Somerset County Council, and the Bath and West Society.

XVIII.—*The Society's Exhibition at Plymouth.* By THOS. F. PLOWMAN, Secretary and Editor.

THE Society's 1902 Exhibition at Plymouth was opened on Tuesday, May 27, and closed on Saturday, May 31.

A plan showing the situation and arrangement of the Yard will be found facing the title-page of this volume.

ANNUAL MEETING OF MEMBERS.

At the Annual General Meeting of Members, held on the third day of the Show, in the Council Pavilion, the following Report of the Council was received and adopted:—

The Council congratulate the Members upon once more visiting Plymouth after an interval of more than a quarter of a century, the

Show being last held there in 1873. The cordiality with which the Society was then welcomed has been repeated on the present occasion. The Local Committee, representing "The Three Towns" and district, have done all in their power to make the Meeting a success, and the thanks of the Society are due to them for their efforts.

The present Exhibition is a very large one, and a comparison of the number of entries with that when the Society last visited Plymouth indicates how much the Show has grown in the interval. In 1873 the entries of Live Stock and Produce numbered 1,027; in 1902 they are 1,686. Then Implement and Machinery occupied 5,197 feet run of shedding—now they require 5,657 feet run; whilst the open space set apart for larger Agricultural exhibits has had to be increased from 5,616 square feet in 1873 to 17,987 square feet in 1902.

In 1873 there was no Working Dairy in the Show Yard and no competitions outside the Live Stock and Produce Classes, except for shoeing smiths, who numbered 14. On the present occasion there are 246 competitors in the Shoeing, Shearing, Butter-making and Milking Classes, including those in the local classes provided by the Devon County Council for its pupils.

In 1873 the Prizes amounted to 1,352*l.*; in 1902 they reach a total of nearly 3,500*l.*

The Society's sphere of work, apart from the Show, has been similarly enlarged, especially in the direction of practical education and scientific research.

The Council have particular pleasure in recognising the friendly co-operation with respect to the Plymouth Meeting of the Devon County Agricultural Association, who have suspended their Show for the year and have contributed 100*l.* to the Prize List. Under these circumstances, the Council felt that they would be acting in accordance with the feelings of the Members generally if they conferred the same privileges for the meeting upon the Members of the Association as are enjoyed by Members of the Bath and West Society, and this has accordingly been done.

The Council have also gratefully to acknowledge the receipt of special Prizes from the Plymouth Local Committee, the town of Devonport, the Devon County Technical Education Committee, the Earl of Mount Edgcumbe, Lord St. Levan, B. de Bertodano, Esq., W. R. Flower, Esq., A. O. Sillifant, Esq., H. Y. B. Lopes, Esq., R. Bayly, Esq., J. Bayly, Esq., Sir James Blyth, Bart., the Shire Horse Society, the Hunters' Improvement Society, the Hackney Horse Society, the Shorthorn Society, the Red Polled Cattle Society, the Polled Cattle Society, the English Aberdeen-Angus Cattle Association, the English Kerry and Dexter Cattle Society, the English Jersey Cattle Society, the English Guernsey Cattle Society, the Southdown Sheep Society, the National Pig Breeders' Association, the British Berkshire Society, and the Large Black Pig Society.

The Council, in view of the fact that there are now many more

picture exhibitions held throughout the country and greater facilities for visiting them than formerly, have discontinued holding an Exhibition of pictures on the lines hitherto adopted. They have substituted for it an Exhibition of Work, representative of Arts and Handicrafts, executed by pupils attending classes held in connection with Technical Education Committees, Schools of Art, and other public bodies, and have added to this an Exhibition of specimens illustrating geology, entomology, botany, &c., in their relation to agriculture.

During the past year the Council have continued their efforts for the promotion of Technical Education in Agriculture by organising and conducting, on behalf of the Somerset County Council, a Cheese School at Mark, and it has had, since its opening in April last, as many pupils as it was possible to accommodate.

Experiments upon the improvement of grass land are in progress, and the Council are also conducting, in conjunction with the Board of Agriculture, an experiment for ascertaining the influence of various manures upon the production of mutton.

With the co-operation of the Board of Agriculture and the Somerset County Education Committee, the Council have embarked upon an investigation into the origin and cause of flavour in dairy produce, the cost of which will be defrayed by annual grants for three successive years of 200*l.* from the Board of Agriculture, of 100*l.* from the Somerset Committee, and of 150*l.* from the Bath and West Society.

The Council have also followed up the practical and scientific investigations, initiated by the Society a few years since, in connection with Cider-making, and the Board of Agriculture has borne testimony to their utility by making an annual grant in aid of them. The Council have suggested to the Board the desirability of extending this work, and have asked it for some additional monetary help (to be supplemented by an increased grant from the Society) towards the cost.

The Council regret that during the past year death has deprived the Society of one of its Vice-Presidents, Earl Temple, who had also filled the office of President with much advantage to the Society, and had in other ways manifested his interest in its work.

The Council have accepted a very cordial invitation to hold the Annual Meeting in 1903 at Bristol.

The Council have much pleasure in recommending that the Duke of Beaufort be elected President for the ensuing year. Also that the gentlemen named on the Agenda Paper be elected Members of Council for the years 1902-1904, in room of those retiring by rotation.

In conclusion, the Council would earnestly impress upon every Member of the Society the desirability of making an effort to increase the roll of membership, by bringing under the notice of others, especially those interested in the land, the advantages the Society offers. The increasing demand upon its funds resulting

from the additional work which, in the direction of experiment and research, it has in recent years taken upon itself, renders it more than ever necessary that its income should be fully maintained. But, beyond this, an increasing membership affords substantial evidence of vitality, which is in itself a source of influence and strength.

ENTRIES.

The following is a comparative statement of the entries in the Stock and Produce Classes in 1873 (when the Society previously visited Plymouth), 1901 and 1902 :—

	Plymouth. 1873.	Croydon, 1901.	Plymouth. 1902.
HORSES :—			
Agricultural	24	67	53
Hunters, Hacks, Ponies, Harness and } Jumping	49	243	223
	— 73	— 310	— 276
CATTLE :—			
Devons	82	28	32
South Devons	51	..	52
Shorthorns	65	76	59
Herefords	41	42	41
Sussex	44	33	16
Jersey	27	158	115
Guernsey	32	78	67
Kerry and Dexter .. .. .	..	36	43
Red Polled .. .. .	..	24	23
Aberdeen Angus .. .. .	..	54	15
Dairy	2	104	52
	— 344	— 633	— 515
SHEEP	211	188	170
PIGS	90	136	103
POULTRY	309	374	398
FARM PRODUCE :—			
Cheese .. .. .	..	65	46
Butter and Cream .. .. .	..	94	113
Cider .. .. .	..	53	65
	— ..	— 212	— 224
Total	1,027	1,853	1,686

A list of the Awards, names of the Judges, &c., will be found on pages i.-lxxiii. of the Appendix to this volume.

CIDER.

A separate Report dealing with this section of the Exhibition will be found on pages 103-115.

PRIZES.

The following Table shows how the money prizes were apportioned at the 1873, 1901, and 1902 Exhibitions :—

	Plymouth, 1873.			Croydon, 1901.			Plymouth, 1902.		
	£	s.	d.	£	s.	d.	£	s.	d.
Horses	355	0	0	846	0	0	800	0	0
Cattle	1,077	0	0	1,242	10	0	1,242	0	0
Sheep	498	0	0	387	0	0	509	5	0
Pigs	128	0	0	245	0	0	245	0	0
Cheese .. .. .	..	..	..	109	0	0	106	0	0
Butter and Cream .. .. .	..	..	..	59	10	0	63	10	0
Butter-Making .. .. .	..	..	..	40	0	0	74	0	0
Milking .. .. .	..	..	..	11	5	0	11	5	0
Shoeing	6	6	0	35	0	0	54	10	0
Poultry	*187	0	0	175	0	0	164	5	0
Shearing .. .. .	..	..	..	..	..	..	26	17	6
Total	2,246	6	0	3,150	5	0	3,296	12	6

The Money Prizes in 1902 were contributed as follows :—

	£	s.	d.
By the Bath and West and Southern Counties Society	2,773	10	0
„ Devon County Agricultural Association	100	0	0
„ Plymouth Local Committee	105	0	0
„ Shire Horse Society	5	0	0
„ H. Y. B. Lopes, Esq.	10	10	0
„ J. Bayly, Esq.	5	5	0
„ A. O. Sillifant, Esq.	10	10	0
„ Lord St. Levan	20	0	0
„ Shorthorn Society	20	0	0
„ Red Polled Cattle Society	42	10	0
„ English Aberdeen-Angus Cattle Association ..	10	0	0
„ English Kerry and Dexter Cattle Society ..	10	10	0
„ Earl of Mount Edgecumbe	20	0	0
„ English Jersey Cattle Society	31	0	0
„ English Guernsey Cattle Society	2	0	0
„ R. Bayly, Esq.	10	10	0
„ W. R. Flower, Esq.	15	0	0
„ British Berkshire Society	5	0	0
„ Large Black Pig Society	20	0	0
„ Devon County Technical Education Committee	80	7	6
	£3,296	12	6

Gold, Silver, and Bronze Medals were also given by the Society, and Medals or Plate by the Shire Horse Society, the Hunters' Improvement Society, the Hackney Horse Society,

* Including Pigeons.

the Town of Devonport, the Polled Cattle Society, Sir James Blyth, Bart., the English Jersey Cattle Society, the English Guernsey Cattle Society, B. de Bertodano, Esq., the Southdown Sheep Society, the National Pig Breeders' Association, and the Devon County Technical Education Committee.

IMPLEMENTS.

The following is a comparative statement of the number of feet run of Shedding provided for Implements, Machinery, &c., and of the number of square feet of open space occupied by exhibits unsuitable for Shedding:—

	Plymouth, 1873.	Croydon, 1901.	Plymouth, 1902.
Machinery in Motion feet run	420	630	1,008
Agricultural Implements "	..	3,395	2,790
Feeds, Cattle Foods, Artificial } Manures, &c. "	4,777	842	759
Carriages and other Exhibits not } strictly Agricultural* "	..	725	1,100
<hr/>			
Open Space for Farm and Horti- } cultural Buildings, &c. sq. feet	5,197	5,592	5,657
	5,616	19,235	17,987
	10,813	24,827	23,644

MISCELLANEOUS DEPARTMENTS.

A fully equipped Working Dairy, in which the Butter-making Competitions were held, formed as usual a prominent feature of the Show. Here various dairy implements and appliances—including power and hand separators—were shown at work, and the best methods of making butter and clotted cream were practically demonstrated. By arrangement with the Devon County Council, who made a monetary grant for the purpose, the testing of milk for quality and of whey for acidity was illustrated by experts.

There were also Shoeing, Shearing, and Milking Competitions, and Exhibitions of Art Manufactures, Flowers, Bees, and Bee Appliances. A new feature was the Arts and Crafts Section, in which work executed by pupils of Schools of Art, Technical Education Classes, &c., was exhibited, and also collections illustrating geology, zoology, entomology, botany, &c., in connection with Agriculture.

* Since 1891, the Society has felt it necessary to considerably restrict the exhibition of Miscellaneous goods; hence less space has been allotted to this Section.

COMPARATIVE STATEMENT OF ENTRIES FOR COMPETITIONS
FOR MEN AND WOMEN.

—	Plymouth, 1873.	Croydon, 1901.	Plymouth, 1902.
Butter-Making .. .. .	..	138	117
Shoeing	14	87	86
Shearing .. .. .	..	..	29
Milking .. .. .	..	18	16
	14	243	248

Musical performances were given by the Band of the Royal Marines (Plymouth Division).

The first of the following tabular statements refers to the number of persons who paid for admission to the Show Yard, and the second to the admission receipts:—

Number of Admissions.	Plymouth, 1873.	Croydon, 1901.	Plymouth, 1902.
At 7s. 6d. (Season)	220	421	378
„ 5s. .. .. .	..	756	463
„ 2s. 6d. (Children) .. ..	..	23	11
„ 2s. 6d.	15,592	8,858	11,592
„ 1s. (Children)	851	500	1,028
„ 1s.	42,156	27,148	35,792
„ 6d. (Children)	8,590	3,545	4,772
Total	62,409	41,251	54,036

—	Plymouth, 1873.	Croydon, 1901.	Plymouth, 1902.
Show Yard	£ 4,271 12 0	2,928 0 6	3,668 3 6
Horse Ring Stand	£ 7 9 0	365 13 0	454 10 0
Working Dairy .. .. .	..	6 0 6	8 5 0
	£ 4,339 1 0	3,299 14 0	4,130 18 6

A comparative statement of attendances since 1852 will be found on pages lxxxv., lxxxvi. of the Appendix to this volume.

XIX.—*Annual Report of the Society's Consulting Chemist*
(Dr. J. A. VOELCKER, M.A., F.I.C., &c.).

DURING the year 1902, twenty-two samples, as against ten in 1901, were sent to me for analysis by Members of the Society. The list of these is as follows:—

Linseed Cake	1
Cotton-seed Meal	1
Maize Meal	1
Bone Meal	1
Dissolved Bones	1
Dissolved Guano	1
Kainit	1
Milk	4
Butter	1
Water	10
Total	<u>22</u>

The linseed-cake was sold as "Extra St. Petersburg Linseed-cake" at 8*l.* 17*s.* 6*d.* per ton. It gave 11·17 per cent. of oil, but was not a pure cake, for it contained hemp and spurry-seed in some quantity, with other starchy impurities.

The cotton-seed and maize meals were satisfactory.

The bone-meal was of excellent quality, showing 50 per cent. of phosphate of lime with 4 $\frac{3}{4}$ per cent. of ammonia. The kainit contained 22 per cent. of sulphate of potash, and both dissolved bones and dissolved guano gave very good analyses as follows:—

	Dissolved Bones.	Dissolved Guano.
Moisture	13·41	10·49
*Organic matter and Salts of Ammonia	31·36	45·30
Monobasic Phosphate of Lime	10·55	13·27
(Equal to Soluble Phosphate)	(16·52)	(20·78)
Insoluble Phosphates	13·51	7·99
Sulphate of Lime, &c.	28·58	19·81
Insoluble Siliceous Matter	2·59	3·14
	100·00	100·00
* Containing Nitrogen	2·54	8·19
Equal to Ammonia	3·08	9·94

The sample of butter forwarded contained 13·15 per cent. of water, and, of the four milks, one was not genuine, yielding only 2·90 per cent. of fat and 10·86 per cent. of total solids.

The greater number of samples consisted of waters, and the examination of these showed that seven out of the ten were suitable drinking supplies, one was to some extent contaminated, and the other two were highly polluted and quite unfit for drinking use.

The Note-Book.

Food for Sick Animals.—With few exceptions illnesses are accompanied with a rise of temperature and a disposition to constipation; hence the need of invalid foods of a laxative character. What are these, and how should they be prepared? In reply to this question, Mr. H. Leeney, M.R.C.V.S., writing in the 'Farmer Year Book,' says: It may be asked, why laxative foods, when medicines are so much more active? The answer is that medicines should never be given where diet can effect the object desired; since drugging is but an artificial and temporary means, while dieting is likely to be lasting, and is more consistent with Nature's laws. There are several articles of diet which not only act as mechanical looseners of a constipated bowel, but tend to allay inflammation, reduce temperature, and promote the excretion of waste material through the skin and kidneys as well as the alimentary canal; at the same time building up the animal's tissues. Among them may be mentioned the various grasses cut green, wheat, oats, barley and maize (while green), lucerne, carrots, parsnips, mangels, swedes, bran mash, linseed and bran mash, gruel, boiled barley, linseed and hay tea, pearl barley and apples. These substances pretty well exhaust our available laxative food stuffs in this country; in hot climates sugar cane and bamboo cut green are also employed. Cooked foods, either for horses or cattle, given over a long period and to the exclusion of other and unprepared foods are not desirable.

Very bad cases of indigestion arise among "stodged" dealers' horses, made fat on cooked foods, and cattle whose ration consists for long of cooked potatoes and meals are apt to take on serious digestive maladies. I am not here recommending boiled barley and the like, save as an invalid food, when the animal must be tempted with anything it can be induced to eat. Food should be offered to the sick in small quantity and often, and taken away as soon as it is found that the patient will not eat it. It is therefore most important that a mash or other stuff should not be left, as one constantly finds in all but the best regulated

stables and byres. Barley should be cooked in the smallest amount of water necessary, and contain a tea-spoonful of salt to the gallon when served to horse or ox. The grasses should not be too much handled, or given too wet, or frosted, and the invalid should have only a few mouthfuls offered at a time. There are times at the crisis of an illness when a few blades of grass held points upwards will be taken, but if held the reverse way, or merely placed in a manger, will not be touched. Recovery often dates from the first bite or mouthful of food which a sympathetic nurse induces a sick animal to take. A "fancy" for some particular article of food on the part of an invalid person, if quickly indulged, may prove the turning point with him. I venture to say that it is the same with animals.

The professional attendant on a sick animal will often order gruel. A gallon is a useful quantity to make, and if not taken by the sick horse or cow may be utilised in the piggery, if the disease is not of an infectious nature. One pound of oatmeal, barley-meal, or flour, will make a gallon of good gruel. The water should be put in the vessel first, or there is a burnt portion at the bottom of the pan which completely spoils all the rest. The meal should then be stirred continuously, until the water boils, after which it can be set aside to simmer on the hob until it is of uniform thickness. Most animals will eat a thick gruel or mash more readily than a thin or "sloppy" one.

The preparation of a bran mash is an equally uncertain performance by novices in sick nursing, and it may be well to give suitable proportions. First swill out a bucket with boiling water; mix an ounce of salt with three pounds of bran, and pour on three pints of boiling water; cover over and allow it to stand for twenty minutes in warm weather, or half an hour if cold. This makes a thick mash, but cold water may be added for a horse or cow with a preference for a washier meal. Bran, it should be remembered, holds the heat, and although the top may be cool when turned out into the manger the hottest part is uppermost, and an invalid annoyed by finding it too hot at first will very likely be put off his fancy for it altogether. In such little matters does the trained and sympathetic nurse prove his value. Bran wet is a laxative, bran dry may be fed for any length of time without relaxing the bowels. There are a few exceptions to this statement, but it may be taken as a broad rule. Wet bran acts almost entirely as a mechanical laxative, not waiting for digestion, whereas dry bran slowly insalivated and saturated by the digestive juices is a nourishing food. For our present purpose we consider it as a laxative, and in its medicinal aspect, rather than for its food value.

Still more laxative in its character, and having most valuable additional properties, in cases of catarrh and lung trouble, as well as in impaction and digestive disturbance, is a combined mash of linseed and bran. The trouble, however, is to get it eaten. The majority of horses and cattle will eat a plain bran mash when sick, but some few will not; perhaps half the number will altogether refuse linseed. The addition of salt is with most an incentive, and others may be tempted by a little aniseed or cattle spice. Linseed and bran mash should be made by slowly boiling for at least two hours half a pound of linseed to one pound of bran and one ounce of salt in one gallon of water.

Linseed tea is a most valuable article of sick diet. It is only the trouble incurred in making it, which prevents its universal adoption. It practically takes all day to prepare linseed tea to get the most out of it. Half a pound of linseed in a gallon of water put on the hob and allowed to gently boil until the evening will make a fine demulcent fluid for pouring over the corn and chaff, or other food prescribed for the sick or the well, since nothing makes animals sleeker and in better bloom than linseed judiciously fed. Slow boiling gets all the nourishment out of it as no other method can.

Those foods mentioned previously are nourishing to a greater or less extent, but not so well calculated to build up a convalescent as to play the part of laxatives and reducers of temperature. When the crisis of an illness is past it is our chief object to restore the animal to its former condition, either of working or milking, or growth and development. We may hasten the process by tonic medicines and especially nutrient foods capable of easy digestion and rapid assimilation.

Developing New Varieties of Potato.—Why do we want new varieties of potato? asks Mr. W. J. Malden, in the 'Mark Lane Express Almanac.' Because every variety of potato deteriorates in cropping and disease-resisting powers until it reaches a point when it is no longer profitable to grow. The cultivated potato is in an abnormal condition, its constitution being greatly altered by the high cultivation to which it has been subjected, and because of the long selection in the direction of greater tuberation. To gain new vigour it is necessary to obtain new varieties by cross-breeding. The effects obtained by cross-breeding are not permanent, and the period during which they are sufficiently marked varies from a few years to, in very rare instances, above twelve or fifteen years. New varieties must therefore always be coming forward,

otherwise the something like 2,000,000 acres grown in the United Kingdom would soon be in a parlous condition.

Last year, in a lecture on potato growing, we mentioned the fact that the name of a potato not yet in the hands of farmers and gardeners would be a familiar household word in the course of a very few years. That name was the Northern Star. It is a familiar name already. Last year it was put on the market at 10s. per lb., or at the rate of 1120*l.* per ton. There may be those who would say such a thing is impossible. Those who have no experience in developing new breeds would argue that it is impossible to grow a crop worth 1000*l.* per acre, but as the producer has sold several thousand pounds' worth off less than an acre, their opinion is not worth much.

The subject of developing has thus been brought before the public much more prominently than at any previous time. Many new varieties have been brought out, but after a little trial they have been found wanting. In our opinion, after two years of growing, the finest First Early ever produced has been brought out by Mr. Harris, under the name of Sir John Llewellyn. We can claim a quarter of a century's experience in growing potatoes on a large scale, and with a special application to early varieties, but nothing we have met with during that time has approached the Sir John Llewellyn. We can truly say we have never seen a diseased tuber; the cropping powers are equal to a maincrop; the quality is as near perfection as we have seen in a potato; and it is the earliest to ripen. In these days, when so many potatoes are raised for the early market, the production of this variety is an event of almost national importance, as it will give English growers a strong position against foreign growers, who take so much of the highest prices in the markets. All those who box or sprout their early potatoes should grow this variety.

It must not be thought that developers can make money out of every new kind brought forward. It is very rare that an exceptional variety turns up. We have had as many as sixty varieties growing at once, all chosen with care from the best introducers, without striking one of special merit. Thousands of new breeds are made every year, and the few varieties in cultivation prove how few are worth cultivation. There are far fewer varieties than the names of those in cultivation suggest, for a good potato is brought out by a large number of people under different names, so developers should take care not to pay a high price for what they think is a new variety, but which is in reality an old one which can be purchased for as few shillings under its proper name as they are asked to give pounds for when re-christened.

Dairy Regulations.—In a lecture before the Glasgow and West of Scotland Agricultural Discussion Society, Mr. Findlay said: No doubt there has been a decided improvement on the dairy premises at many farms, and in a large number of cases the sanitary authorities, aided by the regulations, have been the means of securing benefits in that direction which would not otherwise have been obtained. Perhaps the greater number of improvements have been granted by proprietors, at the request of the occupants, who felt the difficulty of getting the dairy work accomplished in a cleanly and economical manner. Owing to the scarcity of labour, it will hardly pay to retain the scattered, uncomfortable buildings and uneven floors of bygone days.

Formerly people were not aware of the dangers connected with the milk supply, but in recent years there has been a decided improvement. Nearly every outbreak is investigated and the cause made public. There is one important point to be noted in these cases, namely, that the milk seldom, if ever, became contaminated owing to the construction of the premises, but nearly always because the parties handling the milk were coming in contact with fever patients; or it might be through milk cans being left in houses where fever existed, and afterwards conveying infection to the dairy.

Generally speaking, sanitary officials consider that the milk-house should have no connection with the byre or dwelling-house. I admit that the milk-house, in no case, should communicate directly with a dwelling-house. It is quite possible, however, to have a connection by a well-ventilated passage, and there are a great number of milk-houses so arranged. Indeed, a connection is sometimes preferable, because it helps to induce a current through the milk-house in dull weather, when there is no other force likely to cause a change of air; and stagnant air is not considered good for dairy premises. Then a milk-house door entering from an inside passage is more favourable to cleanliness, by excluding dust, &c., than an outside door. There is no need for a hard-and-fast rule on this question, and every case ought to be decided on its merits by a man of practical knowledge and experience, after due consideration of all the circumstances. With the demand for no internal communication between the byre and milk-house I have little sympathy. Of course, I do not approve of direct communication, but there ought to be little difficulty in so arranging the buildings that the milk-house shall be free from contamination and yet be accessible from the byre, without exposing the milkers to the inclemency of the weather. We must not forget that many of those engaged in the work of the dairy are just as

refined and sensitive as other people, and their feelings ought to be considered ; and dairy premises should be as comfortable as possible, so that they may have some pleasure in their work. These outside doors are not conducive to spotless milk-house floors, and sudden changes of temperature are as dangerous to the health of the milkers as to other people ; and the risk to the cattle from open doors is greater than many imagine. Sanitary inspectors sometimes presume on the ignorance of others, and recommend the alteration of premises which they have no power to enforce.

Perhaps on no subject is there greater diversity of opinion than on ventilation, and it is natural for any one who takes an interest in the matter to prefer a particular system ; but I do not admit the right of a sanitary inspector to force his theory on those who object to it, and can give good reasons for doing so. The authorities should bear in mind that, in the application of ventilation, the dairy farmer is master of the situation, and, unless he is convinced that certain proposals are beneficial, no bye-laws will compel him to adopt them. I am not prepared to defend the contention that, because dairies and cowsheds have been allowed to pass under the old regulations, we are to infer that there is no further need for improvement. In fact, speaking generally from my own observation, there are many which might and ought to be in a much better condition than they are at present ; at the same time, I feel it would be unnecessary and unwise to insist upon compliance with all the new regulations. But there is another aspect of this question which deserves careful attention. I am told the Local Government Board consider the minimum cubic space should be 600 feet, and the floor space 50 feet per cow. In regard to floor space, there are plenty of double byres 20 feet wide from wall to wall, and a space for each cow of 3 feet wide ; this gives a floor space of 30 square feet. This is perhaps too little ; but it must be admitted that cows have been so kept for many years, and the health record will compare favourably with others which have a much greater floor space. In considering cubic space, my present opinion is that a byre of 500 feet per cow can be made quite as healthy as one of any other capacity. A far more important matter is ventilation, and I will only remark generally that there should be plenty of inlets, so arranged as to provide a sufficient supply of fresh air, with corresponding outlets in the roof ; and all these openings should be provided with a suitable and convenient means for regulation, so that on a dull day we can have a large opening, and in stormy weather a smaller one. With this arrangement, 30 square inches of inlet for each cow will not be found excessive in ordi-

nary circumstances. Assuming that a practically perfect byre has 500 cubic feet, 40 feet of floor space, 30 square inches air inlet, and 1 foot of glass per cow, is it necessary that all byres, old and new, should conform to that standard? Observe, this demand is supposed to be in the interest of the public health; but surely the houses of the people have more influence on their health than the indirect connection, through dairy products, which the public have with cow-houses. There are bye-laws for building dwelling-houses, and very necessary they are; but where do we find the local authorities applying these new bye-laws to every old house, or to any old house? The old dwelling-houses are either declared unfit for habitation, or simply made habitable. Old byres should be dealt with on just the same principle. I endorse the views of Mr. Primrose M'Connel, when he says, "The fact of the matter is, regulations have been adopted at the instance of scientific faddists, who care nothing for the trouble, expense, and extra labour involved to the farmer and his folk; and I certainly know of no necessity to proceed to such absurd lengths as some local authorities want to go. They ask landlords and farmers to lay out money on buildings, and to increase the cost of labour therein to an extent that dairy farming will not now bear, handicapped as it is by foreign competition, and the refusal of the Government to exact the same conditions from our foreign competitors in these matters as are exacted from us."

I am very pleased to say that the Lanarkshire authorities have been giving attention to tuberculous udders, and their experience confirms the view that tuberculosis of the udder is very rare indeed. Two veterinary surgeons, after inspecting 609 cows in populous places, reported that no tuberculosis of the udder was found. I am sure we all welcome investigation and experiment, with the view of gaining more knowledge regarding milk, but this rushing for further powers to restrict the dairy industry, serves no good purpose, and will not until we have better reason for doing so than we seem to have at present.

Hops and Cold Storage.—It is only by growing and curing our hops by the best possible methods that we can hope to secure the highest qualities, and thus be able to hold our own in the face of our competitors. Cold storage is most intimately connected with our future prospects. The partial protection hitherto accorded to our hop-planters by the fact that their produce was perishable within a short period, is now being rapidly taken away. Consumers, having had experience of cold storage, are satisfied that yearlings, and even older hops, are as serviceable in the copper as new ones, and, therefore, are now

able to regulate their purchases without any fear of loss, and so long as they are left to take the sole advantage of the new system will certainly use it to control the value of hops to suit their own convenience. This is part of the process of evolution, the possible effects of which can hardly be over-estimated. But wideawake planters will not be slow to discern that there are two sides to the picture, and that it is possible for them also to avail themselves of the opportunities now within their reach. As the conditions of our trade must be largely changed by this process of preservation, it will be wise for us to change our methods whenever it may appear to be desirable. Hops, deposited in cold storage, will retain their quality and their value as well for us, as for the brewer or the merchant. Goods which cannot depreciate, and are at any time realisable, are good security. If, therefore, holders should require advances upon cold-stored hops, money can be obtained without difficulty in certain proportion to their current value. In any case, the knowledge that hops may be held over without risk of deterioration, will impart confidence to planters, and thus put into their hands a weapon which should assist them in defending themselves against the modern tendency of trade. Whether this can best be secured by co-operation amongst growers in establishing cold stores for their own use, or by taking space in public stores, remains to be considered. Probably the latter alternative is the simplest and most practical. But, in any case, some defensive steps must be taken if we are to retain control of our business, which control is absolutely essential to our future prosperity. To accomplish this desirable object, more complete agreement amongst English planters is necessary, and the best result of the evolution of the industry will assuredly be found in the development of a cordial spirit of unity.—*Mark Lane Express Almanac.*

Corn Weevils.—Mr. Fred. V. Theobald, M.A., writing in the 'Agricultural Gazette,' says: Whilst everyone connected with the shipping and storing of corn is agreed that weevils do an enormous amount of harm, the same cannot be said as to the influences which cause the increase of these pests. On the one hand, the practical man's theory is that heat and moisture generate weevils, or, at any rate, that heat and *moisture* are essential to their development; on the other hand, we are told they breed best in dry grain. One side or the other is wrong, of course.

There are two kinds of weevils that attack corn—one called the corn weevil (*Calandra granaria*), the other the rice weevil (*C. oryzae*). The former is apparently a temperate zone species,

its home being the Mediterranean area; the latter is tropical—probably its original home was India. The corn weevil is dark brown to rusty-brown in colour; and that part of the body called the thorax has oblong punctures, and it is devoid of wings. The head is prolonged into a blunt rostrum. In length it varies from one-twelfth to one-seventh of an inch. The rice weevil is very like the preceding, but has a pair of ample wings, and is usually lighter in colour, sometimes having four rusty-red spots on the body. The corn weevil is the commoner in this country, and breeds in most mills and granaries.

There is practically no difference in the way in which these two species develop. The period of development in both is so elastic that one can only give approximate dates; heat greatly increases their reproductive powers and hastens growth, cold retards development and checks reproduction. The weevils lay their eggs in the grains of wheat, having first bored a small hole in each grain by means of their proboscis, and sealed the same up with a drop of saliva. A single egg only is laid in a grain of wheat or barley, but several may be laid in a maize cob. The egg gives rise to a small, white, fleshy, footless maggot, which lives inside the grain, feeding on the endospermal part (flour), but not touching the germ. In this position the maggot changes into a dormant stage, a pale pupa, in which the maggot is transformed into the adult, the legs, wings, feelers, &c., being plainly visible in the pupa. On hatching from the pupa, the perfect beetle escapes from the wheat grain. In England these changes take from thirty-two to forty-seven days in a warm room. In some cases development has been prolonged for thirteen weeks. In warm, dry grain I have hatched *C. granaria* in twenty days, at a temperature of 70° Fahr. In warm climates as many as six to eight broods may occur in the year. The warmer the climate, the greater the increase of the pests, and thus the longer the time taken by a vessel in coming through the tropics the greater is the damage done to the cargo.

Practically all grain, *i.e.*, wheat and other cereals, rice, buckwheat, chick peas, beans, &c., are damaged by weevils. This damage is done by both maggot and beetle. The beetles also cause harm to groceries, flour, and meal, to bread, cakes, and other stored commodities.

The rate of increase depends on temperature and season. Curtis estimated that in the South of France one female would account for an annual increase of 60-45. From observations I have made, I should say this is much below the average.

As to the conditions favouring weevil increase there is no doubt. Warm air and moderately dry or dry grain are the most

potent factors. It is well known that ventilation of *warm air* encourages them on board ship and in stores, whilst ventilation of cold air checks them. Weevils will not breed in a temperature below 45° Fahr.; they breed most freely at 60° to 70° Fahr. Absence of air is detrimental to them, as to all forms of animal life, save parasites; in fact, they can soon be asphyxiated by putting weevily grain in an air-tight bin and then exhausting the air by means of a lighted candle placed on the top of the grain—a plan commonly carried out in the Colonies for clearing corn of these pests. The Indian ryot keeps his corn in earthen pits, partly to prevent weevil. We also know that the weevils work mostly on the outer layers of corn when stored, and on the outer and top tiers of gunny bags on board ship; that is, where there is most air.

Again, *excess of moisture is detrimental to weevil increase*. This fact some people seem to take exception to, but that is simply because they have never troubled to investigate the matter; they say you always find weevily cargoes with much moisture. Would it not be very surprising if it were not so? Surely, everyone knows that animals create moisture in their excrement, and also generate heat. It is not the moisture and the heat that create the animals! One is led to believe that the wetter the wheat the more the weevils breed, and that it is only in wet wheat that they do so. This, I am sure, is quite wrong, for an excess of moisture prevents all such beetles working and breeding. How much wet corn do you find in a granary or mill? Not much, I fancy, and yet I have seen weevils doing endless damage in such places. No doubt the normal moisture in the air is necessary for weevil existence, but to state that the more moisture the more the weevils do damage is, I am certain, quite incorrect.

How to Prepare and Use a Starter.—By a starter is meant a sour liquid containing a considerable amount of lactic acid producing bacteria, which is added to milk or cream for the purpose of aiding and hastening the ripening. Whatever form the starter may take, whether sour new milk, skim-milk or whey, all these liquids are acid; they contain lactic acid which has been produced from the milk sugar by the agency of the bacteria, the chief of which are lactic acid producing organisms only.

Mr. G. W. Tisdale, writing in the 'Agricultural Gazette,' says: There are two distinct classes of starters—(1) pure culture starters, and (2) natural starters. A pure culture starter is originally made from one particular kind of lactic acid producing organism specially isolated for the purpose. Such

starters are usually prepared either by isolating lactic organisms from a clean, pure, healthy sample of milk, or more commonly by purchasing a bottle of commercial pure culture, such as are specially prepared and put on the market by many Danish and Swedish firms. This bottle is opened and its contents emptied into Pasteurised milk, which in time becomes sour and constitutes the starter. Assuming that a bottle of culture be purchased, the manner of its preparation for use is as follows:—Take preferably a couple of gallons of freshly-separated milk and Pasteurise it by scalding it to a temperature of 170° Fahr., at which temperature it should be kept for at least one hour. This kills all the germs present in the milk and leaves it a pure food medium for the pure culture or special type of organism to be introduced. Cool the milk to 80° Fahr. and add the contents of the bottle, which should be thoroughly stirred in. In about twenty to twenty-four hours the milk will have become thick and acid. Precautions should be taken that contamination in any form whatever is avoided, by using an absolutely clean and sterile pail and ladle for stirring, by selecting a clean, airy spot for setting the pail to stand in, and by placing several thicknesses of butter muslin over the pail to prevent contamination by dust. Too high a temperature—above 95° Fahr.—with too quick acidification and separation of curd and whey, is injurious to the flavour of a starter, as is also too low a temperature, bitter flavour becoming developed thereby.

Consistency of starter is a point requiring attention. For introduction into milk, for cheese-making purposes, it should not be too thick, but blend well, and so become thoroughly incorporated with the rest of the milk. The consistency depends upon two points—temperature and percentage of lactic acid. Once having prepared the starter, all that remains is to use and renew it. It must be renewed daily, otherwise the acidity would become too great and the starter stale and contaminated. About a quart is taken and put into a couple of gallons of newly-Pasteurised, separated milk, cooled to 80° Fahr. Here again one has an opportunity of regulating the consistency by the amount of starter introduced into the fresh milk. If it is a very strong and vigorous ferment, probably one pint will be sufficient, the less used the thinner will the starter be next day, other things, *i.e.*, temperature, &c., being equal.

Cream which has been scalded or Pasteurised should be at a temperature of 70° Fahr., and about 5 per cent. of starter should be added. With this quantity ripening is complete in twenty hours. The cream, when ripe, should be cooled down to the temperature at which it is to be churned,

and kept there for two or three hours, as this improves the body or texture of the butter. Cream ripened at a high temperature has always a tendency to give an oily taste to butter. The main reason for Pasteurising cream for butter-making is to avoid taint. There are many who will not be at the trouble of Pasteurising, but who might well use starters with advantage in raw or untreated cream. The starter should be added immediately the cream has been separated and brought to a temperature not exceeding 70° Fahr.

The variety of cheese to be made and the acidity in the milk to begin with greatly influence the quantity of starter to be added for cheese-making. In spring time, when acidity is low and difficult of development, 3 per cent. of starter, or thereabouts, is advisable for hard cheese-making; but later on, when milk is more acid to begin with and gathers acidity much quicker, only 1 per cent., or often less, is required.

Natural starters, such as sour milk, whey, and butter-milk, if of good, clean flavour and properly kept, are very often nearly pure cultures of lactic acid organisms. The strongest-growing micro-organism in a liquid can crowd out the weaker. Thus, in a comparatively pure dairy liquid as whey, air organisms and others of a contaminating nature find little chance for vigorous growth. It may thus be seen that natural starters may be, and often are, more or less, pure cultures; but oftener than not they are simply a means of conveying taints from one day to another. Taints, no matter how careful the cheese-maker is, will sometimes make their appearance. As they are for the most part caused by pernicious bacteria, keeping the whey from one day and adding it to the next day's milk will then carry a taint to what would have been a pure article. Impure butter-milk may act in exactly the same manner when used as a starter in cream. It is frequently argued that natural starters give best flavoured produce, and I am of this opinion myself, when the natural starter is carefully selected, but if taken daily in a mechanical fashion, as is so largely done, without respect to its qualities, it is worse than no starter at all.

Permanent Pasture.—Professor E. Kinch, in reporting on the manurial experiments which have been carried out at the Royal Agricultural College, Cirencester, during the past fifteen years, makes some interesting observations which are of wider interest than the mere results of the experiments. It cannot be too often stated that the results of all manurial experiments depend partly upon the soil and partly on the climate, and not, as seems generally to be supposed, entirely on the manures used. With regard to these experiments, Professor Kinch

says, the soil is a calcareous loam, resting on the great Oolite ; the surface soil is fairly rich in the necessary ash constituents (especially in potash), and in combined nitrogen, but it is rather shallow.

Kainit alone on this soil has diminished the yield of hay ; this appears to be due to its effect in encouraging the growth of Bird's-foot Trefoil (*Lotus corniculatus*), which is very much in evidence on the plot, and is but a light cropper.

Sulphate of ammonia alone on this soil, and under the conditions here obtaining, has given a much better increase in the hay crop than nitrate alone, and the increase has, so far, been well maintained ; the soil has abundance of calcium carbonate.

A little of the superior effect of the ammonia salt is due to the position of the plots in the field, the ammonia plot being a little better soil than the nitrate plot ; but the main reason is probably that the sulphate of ammonia was applied earlier ; and in some of the dry seasons of the last decade the nitrate had no chance of acting as plant food, and was even detrimental to the first crop. No doubt, had it been applied earlier, better results would have followed. But it is noteworthy that where nitrate was used on a plot to which kainit had been previously applied very satisfactory results were obtained—an increase of over 11 cwts. of hay on the average. This result suggests that there may be some physical action playing a part when the manures are used in conjunction.

The main lessons to be learnt from these experiments seem to be that, on these soils, no one simple manure, *i.e.* potash alone, phosphates alone, or nitrogen alone, is economically effective on grass. Any mixture is better, but a complete mixture is best.

For grass, and no doubt for cereals, this soil requires more, especially phosphates and nitrogen, these, with or without the addition of a little kainit, alone of the artificials, gave a remunerative return during a series of years.

Somewhat smaller quantities of the artificials, especially of kainit, would be recommended in actual practice, and, speaking generally, these manures should be applied somewhat earlier in the season than is the usual custom.

On this soil, superphosphate appears to be generally preferable to basic slag.

Compound Manures.—By all appearance there are still many occupiers of land who purchase their requirements of artificial manures in the form of special mixtures prepared by the manufacturers or agents according to standard prescriptions. The extent to which compound preparations are advertised and

pressed upon the attention of farmers is unmistakable evidence of a large and flourishing business in these so-called special manures for this crop and that. It can only be said that it is scarcely a credit to the intelligence and enterprise of the purchasers of fertilising materials that compound articles, selected and proportioned without regard to the requirements of the soil to which they are to be applied, should be so extensively and trustfully employed. It is not for a moment contended that these preparations are devoid of value. On the contrary, they may be peculiarly well suited to the class of soil on a knowledge of which the mixtures are prepared; they may even answer on land of similar texture in other localities, and, although the risk of impurity is greater in proportion to the increased opportunities presented to the vendor for adding foreign material, it does not necessarily follow that all the bought mixtures are less pure than those prepared on the farm. But, making due allowance for all these considerations, and, indeed, after taking the most favourable view of the use of commercial compounds, which after all are admittedly prepared according to the reputed manurial needs of particular crops rather than from a study of the soil, it must be obvious to any one who gives the question a moment's serious consideration that the practice is not only antiquated, but is essentially unsound in principle. The use of such general manures implies that rigorous adherence to rule-of-thumb methods which is entirely out of place in these enlightened and small-profit days.

The chief object to be aimed at in the treatment of land is to manure effectually at the smallest possible cost. The accumulated lessons of dozens of experiments have emphasised that truth by making it clear that the proper lines upon which to proceed were to manure according to the ascertained requirements of each particular field and the recognised preferences of the respective crops. If this wise course be pursued it can readily be understood that the results obtained will be influenced more by the nature of the manures applied than by the quantity, and that the former may fluctuate as much and as effectually as the latter—an economic movement which is absolutely prohibited when the use of bought compounds is persisted in. The farmer must think for himself, and he cannot make a better beginning to his independent career than by freeing himself from the guidance of his manure merchant, who must know less about the condition and capabilities of the land of any particular farm than the occupier himself.

The old-fashioned idea that special compound manures possessed some peculiar and mysterious virtue unattainable in mixtures prepared on the farm is, of course, absolutely erroneous.

As between the commercial products of the several firms there may be marked differences, but what is important for the purchaser to keep in view is the fact that the valuable ingredients contained in the compound are precisely the same as can be procured in abundance among the recognised phosphatic, potassic, and nitrogenous manures. The sources may vary, but these three substances supply all the food which the plants of the farm stand in need of. The results of the experiments at the Harper-Adams Agricultural College Farm, described in the *Field* of December 13, contains a suggestive lesson on this point. It was found on analysis, and confirmed by field demonstration, that an equivalent to a special compound manure could be made from superphosphate, nitrate of soda and sulphate of ammonia, at little more than half the cost of the former. There are numerous instances of spurious articles having been offered in the form of special compounds, and although this description does not by any means apply to all the preparations of the kind on the market, it is only right that buyers should be cautioned regarding the danger to which they expose themselves by using compounds, concerning the constituents of which they have but a hazy and perhaps an erroneous idea.

Another salient objection to the employment of ready-made compounds is mentioned in the comments upon the Harper-Adams experiment, and that is that no useful margin is left for the exercise of discrimination in the application of the different materials. The farmer retains a certain freedom in his choice of a time for the distribution of the manure, but he can expect to benefit very little from the judicious use of this freedom seeing that at least one of the chief ingredients must be applied at the wrong period. If the mixture be put on the land at a time suitable to the slower acting materials then, as a matter of practical certainty, there will be a waste of the more costly quick-acting ingredients; or, conversely, if the latter class were accommodated in respect to the time of application, the former would largely miss their opportunity of benefiting the crop for whose use they were specially intended. The seasonable application of an artificial manure has been proved to be a very important factor in controlling its beneficent effects, and, accordingly, farmers should hesitate before depriving themselves of the privilege of turning the lessons of their experience and observation in regard to this particular point to full advantage. The farmer has the Fertilisers and Feeding Stuffs Act to guard him. If he buys according to the terms of the Act, and insists upon a guarantee with each lot purchased, he need run no risk of being deceived, and it will reduce his manure bill, if he will confine his manurial transactions to the

well-defined classified materials and avoid more or less vague compound manures.—*The Field*.

Horses and Disease.—Professor J. Wortley Axe, writing in the 'Live Stock Journal' on the Prevention of Disease, says: How far housing contributes to the production of disease, and to what extent its baneful influence may be curtailed, is a question of the greatest interest.

That housing is necessary to modern requirements must be admitted. Without it the well-set, glossy coat so much esteemed in all classes of horses could not be maintained, and in towns where space is limited and costly it becomes imperative, and for the same reasons insufficient, but the practice is none the less pernicious on this account. Notwithstanding the immense improvement in our stables and stable management during the past twenty years, housing still continues to exact a heavy toll from the health and life of our horse stock.

In this connection much might be said in regard to the erection of stables, which in too large a measure is entrusted to men having little or no acquaintance with the principles of hygiene and sanitation. To them a stable is a place to protect a horse from "wind and weather," and from the thoroughness with which this object is carried out one would be tempted to think that pure air was something inimical to health and life rather than an indispensable element in the conservation of both.

The importance of site and its surroundings where choice is available seldom receives that amount of attention it deserves, and those still more important points, aspect, air space, ground surface, paving, ventilation, and drainage, receive but scant regard at the hands of the average builder.

It results from all this that a large proportion of our horses are condemned to spend their resting hours breathing the foul products of combustion and decomposition, and wasting the energy they should be storing up to be expended in work. But, beyond this, the lowered vitality of animals living under bad stable conditions renders them susceptible of every passing infection, and favours the spread and increases the danger of every contagious disease.

If disease is to be averted and a high standard of health maintained in our studs, owners of horses must recognise and appreciate more fully than they now do the fundamental requirements of stables, and, by the proper use of ventilators, efficient drainage, and other sanitary measures, ensure for their horses a healthy habitation.

The common practice of closing windows and doors and

otherwise excluding air is like a two-edged sword: it not only shuts out the life-giving air, but shuts in the death-dealing gases, and, if such conditions do not directly kill or give rise to obvious defects, they lower vitality, reduce the powers of labour and endurance, and diminish the resistance to any disease with which horses may be overtaken.

Many of those simple ailments connected with colds are made to assume a low and destructive type by the vitiated and unwholesome state to which the blood is reduced by the filthy air of a badly-kept stable, and yet, when untoward results come about, horse owners affect to be surprised that medical skill fails in its purpose.

Horses were destined by Nature to live an outdoor life, and, excepting where a sleek and glossy coat is a *sine quâ non*, there does not appear to be any reason why they should not do so. Farm horses, and such others as are not in work, would be far better in a well-littered yard with an open shed in winter, and in the open fields in summer, than huddled together in a hot, foul stable throughout the night, breathing and re-breathing air made filthy and enervating by the outpourings of their own bodies. When liberally fed, horses so dealt with are brighter, stronger, more enduring in their work, and withstand, as others cannot, colds and their consequences, and escape from or resist the ravages of contagious diseases in an exceptional manner. All that can be said against this free life I have experienced in my own stud, and at most it only amounts to a negligible quantity. As a means of preventing disease and ensuring a healthy, vigorous race of horses, an out-door existence day and night, winter and summer, is the one to be commended, where no substantial reason exists to the contrary.

Ensilage.—Ensilage, as is well known, is the name given to the process of preserving green fodder in the succulent condition, the product being termed silage, and the pit or receptacle containing it the silo. The essential condition is that the freshly-cut herbage shall be packed sufficiently closely together to prevent the access of air, the presence of a free supply of which would lead to the decay of the material instead of its being preserved. It was at one time thought that a specially constructed pit was necessary, with the application of considerable pressure, but it was subsequently found that the herbage itself could be built up in the form of a stack. To the silage stack, as thus constructed, heavy pressure was applied by means of ingenious mechanical contrivances, but these have been dispensed with, the upper layers of the stack affording sufficient pressure to the lower layers, and the top of the stack

being covered by any convenient dead-weights that may be available. The method of building a silage stack is similar to that of forming a drawn-up dung-hill. Ground with a sloping surface is most suitable, as the tongue to be finally drawn up is then as shallow as possible. The herbage, unless it is exceptionally succulent, can be carted directly it is mown, and deposited on the selected site. As fresh loads arrive it may be arranged for the carts to pass over the herbage already deposited, whilst a horse-drawn roller may be used on the top, both to keep it flat and to consolidate the heap. As the stack increases in height the sides are hand-pulled, or pared, daily, and the material thus removed is thrown on the top. The stack may be made as rapidly as is convenient, and not more than two or three days should be allowed to elapse without the addition of fresh material, or that on the top may become mouldy. If the top herbage shows a tendency to dryness, it should be watered. When the whole of the crop has been carted, the inclined plane of material forming the tongue is drawn up over the top, which is made as level as possible, whilst the sides are kept vertical. To supply pressure a hay stack or corn stack is sometimes built upon the silo stack; failing this, heavy pieces of timber may be used. The ultimate character of the silage, whether "sour" or "sweet," depends upon the temperature at which the fermentation of the heap proceeds, sour silage resulting from temperatures of 120° Fahr. and less. The softening of the vegetable tissues during fermentation causes the heap gradually to sink, but fermentation ceases when the available oxygen in the stack is used up, and the air amongst the herbage is then chiefly carbonic acid gas. Sweet silage has a somewhat aromatic odour, whilst the sour product is far less agreeable to the smell, and should not, for that reason, be fed to cows in-milk. Grass, clover, green maize, and practically any kind of green herbage, may be converted into silage, and this will keep good for years if the stack is well made. Farm animals speedily acquire a liking for silage, and it is specially useful in seasons when there is a dearth of roots or other fresh succulent food. Ensilage is not a process to be employed in preference to hay making, but it may be usefully resorted to at times when the weather is such as to render it impossible to make good hay. It is a mistake, however, to suppose that hay spoilt by wet can be converted into good silage, and the process of ensilage undeservedly acquired some discredit through the failure of efforts thus made to retrieve ruined hay crops. If silage is to be made, the intention should be definite from the outset, and not resolved upon only when the hay crop is in danger of being lost.—*The Times*.

The Effect of Lime on the Insoluble Phosphates in Soils.—Phosphoric acid occurs in the soil as tricalcic and dicalcic phosphates, and also as iron and aluminium phosphates—having their origin from superphosphate of lime by reversion—and tricalcic phosphate from mineral phosphates, such as apatite and phosphorite, which occur naturally in most soils, while iron and aluminium phosphates are nearly always present from the disintegration of vivianite and wavellite respectively. Of these phosphates only the calcium compounds are of any appreciable value as plant foods; though insoluble in water, the acid present in the sap of plant roots is capable of dissolving them and absorbing them into the plant itself. The iron and aluminium compounds are very sparingly soluble in the root sap, and consequently very little phosphoric acid from these is available. The method generally used in England by agricultural chemists to find the approximate value of soil phosphates is that recommended by Dr. Bernard Dyer, who proposed a 1 per cent. solution of citric acid as representing the acidity of root sap. When this solution is allowed to act on insoluble phosphates, such as basic slag, basic superphosphate, &c., some of the phosphoric acid is dissolved out, and this amount of citric-acid-soluble phosphoric acid approximately represents the amount that would be taken up by plants. Phosphates of calcium, such as basic slag, precipitated phosphate, basic superphosphate, and the reverted phosphate of calcium in the soil, are more or less easily soluble in citric acid, while phosphates of iron and aluminium are very sparingly soluble, and hence of little value.

It occurred to me, says Dr. Sutherst, in the 'Agricultural Gazette,' that the addition of lime to the land should have the effect of rendering the phosphoric acid combined with iron available for plant food, since the highly basic lime ought theoretically to combine with the phosphoric acid and set free iron or aluminium hydroxides. From experiments carried out by me in the laboratory of the Cheshire Agricultural College at Holmes Chapel, this is found to be exactly what happens. The resulting decomposition product—calcium phosphate—is very soluble in the root sap. Thus by a very simple process, and one which might be of general use on farms, the worthless phosphates of iron and alumina can be rendered available.

The experimental part of this investigation consisted of treating a known weight of iron and aluminium phosphates with twice its weight of slaked lime in the presence of water, and after certain periods of time the amount of phosphoric acid soluble in citric acid was determined. To show the solubility of these same phosphates alone, portions were treated with 1 per

cent. citric acid and the amount of dissolved phosphoric acid estimated, with the following results :—

(1) Protophosphate of iron, 2·47 per cent. soluble equal to 10·64 per cent. of total phosphoric acid.

(2) Perphosphate of iron, 2·75 per cent. soluble equal to 10·62 per cent. of total phosphoric acid.

(3) Aluminium phosphate, 3·20 per cent. soluble equal to 11·16 per cent. of total phosphoric acid.

The following table gives the results of the experiments :—

Duration of action with lime.	Amount of phosphoric acid soluble.	Proportion of total phosphoric acid dissolved.
I.—PROTOPHOSPHATE OF IRON + TWICE ITS WEIGHT OF SLAKED LIME.		
24 hours	19·55 per cent.	75·42 per cent.
48 „	22·15 „	85·45 „
72 „	22·26 „	85·88 „
II.—PERPHOSPHATE OF IRON + TWICE ITS WEIGHT OF SLAKED LIME.		
24 hours	21·96 per cent.	94·45 per cent.
48 „	22·41 „	96·38 „
72 „	22·45 „	96·55 „
III.—ALUMINIUM PHOSPHATE + TWICE ITS WEIGHT OF SLAKED LIME.		
24 hours	18·45 per cent.	64·33 per cent.
48 „	19·88 „	69·31 „
72 „	20·65 „	72·00 „

This enormous difference of solubility shows the very beneficial effect the addition of slaked lime has in rendering useful and more effective the otherwise dormant phosphoric acid. When once the lime is converted into carbonate, however, this action is quite lost, for when experiments were carried out in the same manner as the above, but using calcium carbonate instead of slaked lime, in no case was the solubility of the phosphoric acid increased.

Sheep Scab.—Great interest is taken by flock-owners in the eradication of this disease; but varied views are held as to the possibility of taking steps which shall be effective in bringing about this result. It may be of interest to show what has been done in the United States.

It was ordered, "That from and after August 10th, 1899, no sheep affected with scabies, and no sheep which have been in contact with others so affected, shall be allowed shipment from one State or territory into another, or from any State into the district of Columbia, or from the district into any State, unless

the said sheep shall have first been dipped in a mixture approved by this Department.

"The dips now approved are :—

"1. The tobacco and sulphur dip, made with sufficient extract of tobacco to give a mixture containing not less than five one-hundredths of 1 per cent. of nicotine and 2 per cent. flowers of sulphur.

"2. The lime and sulphur dip, made with 8 lbs. of un-slaked lime and 24 lbs. of flowers of sulphur to 100 gallons of water. The lime and sulphur should be boiled together for not less than two hours, and all sediment allowed to subside before the liquid is placed in the dipping vat.

"The owner of the sheep is privileged to choose which one of the above mentioned dips shall be used for his animals."

Dr. Salmon, the Chief of the Bureau of Animal Industry, reporting on the results which have followed this law, says in the Annual Report of the Bureau for 1900: "Good progress is being made, and the day need not be far distant when sheep scab will be a record of the past in the United States."

Inspectors are stationed throughout the country, who, when they examine a flock of sheep, or when the dipping is done under their supervision, have to report to headquarters.

These Reports are summarised by Dr. Salmon, and from his Report thereon we take a few sentences.

Writing to the Bureau, the President of the Wool Growers' Association of Idaho says: "I am much in favour of the General Government doing this work, for it must be admitted that your work in the West this year has done more to clean up the scab than all the State authorities combined."

Dr. Salmon says: "There appears to be a disposition on the part of State authorities to co-operate with the Bureau in its efforts to eradicate the disease."

"Owing to certain practical trade conditions the Bureau has thus far insisted only on a single dipping, instead of on two dippings ten days apart. Notwithstanding this concession, of 515,000 sheep dipped, 86 per cent. were effective and only 14 per cent. ineffective. The 14 per cent. of ineffective cases clearly indicates that the period must soon come to an end during which the Bureau can make a temporary concession to traders in order that they may adapt themselves to conditions which they must surely foresee."

Laying Varieties.—The Cornwall County Council have an agricultural committee that for the last two years has been making observations on the laying properties of the different breeds of fowls. The pens were made up of carefully selected

pullets of the same age from good laying strains, and the value of the food consumed, and the number of eggs produced were noted. In the return we are not informed as to the amount of range which each breed was allowed, a very important consideration, however, inasmuch as both the feeding and laying capacity of birds in confined pens varies considerably in the different breeds from what would occur if the birds were in the open. It is well known that light active birds such as Leghorns, Minorcas, &c., find a much larger proportion of their food than birds of the heavier and larger breeds. These considerations were unfortunately not referred to in the reports of the Council. Amongst the best layers of the sitting varieties were the Lincolnshire Buffs, now known as buff Orpingtons, and Wyandottes—both moderately good table birds, the young pullets of which lay fairly well in the winter when eggs are scarce. In the Cornish experiments it was found that between November and April the value of the eggs—unfortunately their number is not stated—might be put down as about 1*l.* 5*s.*, and the cost of the food of the birds producing them at under 8*s.* During the same period the white Leghorns were far the best of the non-sitting breeds, the value of their eggs being 1*l.* 2*s.* The Report says what is perfectly true, that they are excellent foragers, and where they can be given a free run, may be kept very economically, as they would be good layers in the whole of the summer, when the Orpingtons and Wyandottes would necessarily cease to lay in many instances in consequence of becoming broody. The white Leghorns are poor table fowl, and give the best return if killed, especially the cockerels, in a very young condition.

The Anconas and black Minorcas were found inferior to the white Leghorns. Neither are suited for confinement. The Minorcas have evidently lost much of their value since they have been bred for large comb and white ear lobe as exhibition fowls. Plymouth Rocks were found to be good layers, and useful all round fowls. Indian Game, as is well known, are very scanty layers, their value consisting in their superiority as full-breasted table fowl.

We are glad to hear that the Committee are continuing their experiments this year on the laying properties of certain varieties, and that they find the mongrel Cochins, which have been recently regarded as pure bred fowls under the name of buff Orpingtons, are again to the front.—*Field*.

Waste in Farming.—Anyone travelling into different parts of the kingdom during the past summer, says *Agricola* in the *Field*, must have been amazed at the colourings imparted

to the landscape by annual weeds, red poppies covering some fields so profusely with bloom that nothing else could be seen, while the irrepressible charlock, here, there, and over immense tracts, dazzled the eye by its supremacy, overshadowing everything else. The latter weed was to have been exterminated by spraying, but either because the remedy only checks without destroying the pest, or that farmers in general do not avail themselves of the remedy, this annual infested fields more than ever last year. No doubt the season was pre-eminently favourable to weed production.

How great is the waste in agriculture at the present time from growing weeds instead of roots and corn. Farmers who blame the season for all the evil suffered are forgetful of the fact that, by adopting a different system of cropping and cultivation, they may cope with and conquer any weed pest. As to charlock, for instance, whatever benefits are derivable by spraying, a far easier and more efficient method of destruction would be that of growing two or three root or green crops in succession, so as to afford the fullest possible opportunities for the plough, scuffler, and hoe to kill the young plants by the thousand as fast as they spring from the sod. Our best farmers do this, and why should it be neglected by the mass? A Durham farmer, after stating that turnips on his farm and the surrounding district are the crop of the season, makes the admission that it has cost him 1*l.* per acre to keep them free of weeds. Would it not have paid other farmers handsomely to have made a similar outlay rather than permit delays which must prove ruinous to good crop yields. If they cannot afford to pay the cost of singling out swedes and turnips they should grow rape and kale instead, both of which crops may be cultivated without hand singling.

Not only do weed pests, but also insect pests, and especially wireworm in corn crops, cause immense waste. Here, again, a change of cropping, in which green crops have been abundantly introduced, has often proved a perfect cure for fields infested with wire-worm. Probably the surest and best cure for such disease-stricken fields, as well as those which impart to turnips the club root affection, is abundant manuring, so as to ensure the supply of every element of plant food which crops require.

The waste which is greatest of all, that of growing half or three-quarter crops on land which, if manured sufficiently, would be capable of yielding maximum returns, is very much of the nature of an unavoidable evil. The majority of the farmers who raise these defective crops do so because they have not the means to produce better ones. Want of capital to

stock their farms with herds, flocks, and studs in quantity and of a quality to enable them to net profits, is their grave misfortune. Unless, by their own co-operation, Rafeisen Banks, or syndicates, loans can be made available for their aid, or the State can devise some beneficent scheme whereby they might contract loans, they will be compelled to go on practising waste farming until a great many of them sink beneath the waves of depression. A very mistaken impression is abroad that these men require knowledge. Nine-tenths of them would practise resourceful agriculture on the same lines as their betters if they had the means to do so. It is a pitiable state of things, inasmuch as the lands they occupy would, with more capital, often produce three times as much as they do now.

There is still another kind of waste, for which there seems to be little if any excuse, that of allowing the land to remain uncropped for many weeks, and even months, growing nothing but weeds. The evil was greater when summer fallows were in fashion. The latter have been abandoned, and why should not winter ones in the majority of cases be dispensed with likewise? Science pointed out long since that in autumn, winter, and spring, when there are no roots of plants to take up the nitrates that are produced by nitrification, a great loss of manure is incurred by their being washed through the soil. Experienced farmers have always found utility, and a great gain in cropping the lands in winter, that require to be re-cropped to swedes and turnips in June and July. The majority leave large areas to grow nothing but weeds from August until June in the following year. Reform is certainly wanted here to prevent waste, for thousands of these uncropped acres might be made to yield good material for ensilage stacks. These would be sure to be found invaluable sooner or later, either in winter scarcity of roots or when pastures are bare by summer drought, and farmers are often compelled to sell their live stock at ruinous sacrifices.

Milking.—It is only lately that the idea has been grasped that a cow may be educated, as it were, into giving more milk, and milk of better quality, if she is skilfully handled time after time by the milker. Properly milked cows will keep up their flow of milk more readily than cows which are carelessly milked, and whose udders are not thoroughly drained of milk at each time of milking; the flow will, moreover, be maintained for a longer period. Careful milking, as thus understood, will steadily and permanently improve the individual cow as a milk producer. By properly manipulating the udder at the close of each

milking the last traces of milk contained therein will be removed. Many cows yield the last part of their milk very slowly, and thin streams may usually be drawn for a considerable time after the full flow has ceased; by a few manipulations of the udder this residual milk may be brought down in a couple of minutes' time, and more milk will, as a rule, be obtained in this way than can be secured by the ordinary method of "stripping." Inasmuch as the milk thus obtained is very rich, being of the same character and composition as "strippings," the quantity of additional butter-fat is considerably greater than might be inferred from the volume of milk brought down. The manipulations whereby the udder of the cow is completely emptied after the full flow of milk has ceased were devised by Dr. Hegelund in Denmark, where practical instruction is given in the method to milkers. This method of effectually completing the milking operation has been extensively tested at the Wisconsin Agricultural Experiment Station. The investigations were made partly with cows in the station herd, and partly with cows in twelve different Wisconsin dairy herds. The aim in all cases was to ascertain the gain in the production of milk and of butter-fat obtained by a system of manipulations of the udder after the regular milking was finished. In the station herd the average daily production of milk from twenty-four cows was increased by 4.5 per cent. by means of the manipulation method, and the production of fat was increased by 9.2 per cent., as the result of a milking experiment continued for four weeks, the average gain in milk being 1 lb. and in fat 0.09 lb. per head per day. A similar average increase in production was obtained for the twelve dairy herds tested—a gain of 1.08 lb. in the daily production of milk per cow, and 0.1 lb. of fat. The results arrived at in this investigation of dairy herds, extending over a period of four months, with cows in all stages of lactation, indicate that this gain is maintained throughout the whole milking period. The largest quantity of milk obtained from a cow by the manipulation method, after the regular milking had been done, was 5.5 lb. per day, while the smallest was 0.2 lb. The corresponding figures for fat production were 0.64 lb. and 0.02 lb. The greater portion of the gains obtained came through lack of care on the part of the regular milker, by whom the cows had not been milked perfectly clean. But even in herds in which the milkers did their work well there were always one or more cows which gave an increase of nearly a pound of milk and one-tenth of a pound of butter-fat by the manipulation method. The extra milk obtained by this method has a composition similar to that of "strippings"; on the average for all the herds

it contained 10·32 per cent. of fat. The results of the investigation, which was conducted by Professor F. W. Woll, indicate that a thorough system of milking is essential to successful dairying. For, apart from directly increasing the production of milk and fat from the cows, exhaustive milking is calculated to maintain a *maximum* flow of milk throughout the period of lactation, and to permanently develop the dairy qualities of both the dam and her offspring.—*The Times*.

The Farmer's Library.

NOTES AND REVIEWS OF NEW BOOKS.

- 1.—*A Manual of Agricultural Chemistry.* By HERBERT INGLE, F.C.S., F.I.C. London: Scott, Greenwood and Co. 7s. 6d.

THIS is an excellent work, and supplies a distinct want. It is based upon lectures delivered annually to classes of agricultural students, many of whom had acquired some knowledge of general chemistry, and there is no doubt that such knowledge is essential to any one who would fully appreciate or even understand the contents of this volume. One feature which we note with considerable satisfaction is the frequent reference to the original sources from which the author has culled his facts. This spirit of justice and fairness, which is so marked in all foreign scientific literature, is painfully absent from much of our own, as we have frequently had occasion to point out. The value of a work of this description is greatly enhanced by such references, and they in no way detract from the repute of the author. In fact, they should strengthen our confidence in his statements, because they prove that the author does not put before us, unconsidered and half-understood, the work of others. Moreover, we may reasonably have more confidence in the original results and views of such an instructor, feeling certain that they proceed from a student and worker. The author ventures to hope—and we think he is justified in doing so—that not only is the book novel in scope and style, but that certain views therein expressed are original and may prove of service. A word of praise is due for the very excellent way in which the book is printed and produced.

In the introductory chapter the author at once boldly confesses the difficulty which confronts the student of agricultural chemistry :—

“The processes involved in vital phenomena are attended by chemical changes so complex in character that they are often difficult to unravel.

“Agricultural chemistry, therefore, since it deals mainly with the changes occurring in the soil, the growth and life

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of plants, the feeding of animals and the preparation of food products, is frequently called upon to explain changes of the character described.

"In the application of chemistry to agriculture, cases often arise in which the truth of the old adage, 'A little knowledge is a dangerous thing,' becomes strikingly apparent, and the conclusions arrived at from the consideration of a particular problem from the standpoint of ordinary elementary chemistry are quite opposite to the results of actual practice. Such contradictions arise, not from any inaccuracies in general principles, but through leaving out of consideration the effects produced by some apparently insignificant circumstances or conditions.

"It is evident, therefore, that although there is no distinct agricultural chemistry, yet the problems which arise in agriculture demand a knowledge of chemistry in which due attention is given to the peculiar circumstances under which the reactions take place.

"In this work it will be assumed that the reader possesses an acquaintance with general elementary chemistry, and is familiar with the properties of the more commonly occurring elements and their chief compounds."

Assuming, then, this preliminary knowledge, the purely agricultural aspect of the study is proceeded with. First, the elements are considered, then the atmosphere, and next the soil. Although he subsequently mentions it, the author, in treating of the ammonia in the atmosphere, does not seem to realise how important a part this constituent may play in providing the vegetable world with nitrogen, as the minute quantity of carbonic acid supplies the plant with carbon. We are well aware that few writers appear to have recognised this possibility.

The chapter on the soil contains a brief but interesting account of the bacteria which have been found therein and the part they play in agriculture. This is a recent development of science which has not yet been popularly explained to the farmer, mainly, perhaps, because of its highly technical and at present somewhat uncertain character; nevertheless, it bids fair to lead to great practical results in the future.

We should like to have seen in this chapter some notice of the remarkable investigations of Prof. Whitney on the physics of the soil, which though not strictly coming under the term of agricultural chemistry, are yet so intimately associated with the purely chemical problems as to be inseparable therefrom.

Manures are next treated of, and special attention is given to farmyard manure, and to the changes produced therein by

fermentation, a subject which has of late years received considerable attention.

The constituents of plants are considered, and a brief account is given of the proximate composition of some of the chief crops grown on a farm. In treating of the amides—substances which may be designated as organic acids containing nitrogen—the author writes as follows:—

“The amides play an important part in plant nutrition. Being soluble and diffusible they can readily pass from one part of the plant to another, which is not the case with the colloidal albuminoids.

“The amides are apparently not capable of forming flesh in an animal, though they doubtless aid in fat formation and in heat evolution. It is evidently very important, therefore, to discriminate between amides and albuminoids in examining vegetable food stuffs. In many analyses which have been published this has not been done, and in the case of certain varieties of foods, *e.g.*, roots, the results obtained in practice do not correspond with what might be expected from the figures of such analyses. In the modern analyses a distinction between the two classes of nitrogenous ingredients of food is made, and chemical analysis and experimental feeding agree much more nearly.”

Passing from the vegetable to the animal kingdom, the chemistry of life, and of the processes of digestion, and the nature and use of foods are all treated fully.

Milk and milk products next receive attention, and it is evident that the author is here dealing with subjects to which he has given special consideration. Moreover, practical aspects of his subject, in spite of the general scientific character of the work, are not overlooked. Thus on the burning question of the milk standard the author writes:—

“The establishment of a standard by which to judge of the quality and freedom or otherwise from adulteration of a sample of milk has received much attention and consideration.

“The Board of Agriculture decided to take 3 per cent. of fat and 8·5 per cent. of solids not fat, as the probable lower limit in the case of genuine milk, and it was enacted by law that if a specimen did not come up to these figures a presumption should be raised that it was not genuine, by reason of the abstraction of fat or the addition of water. While these values are much below the average and to that extent satisfactory from the producer's point of view,

it must be remembered that with morning milk, when the night interval is much longer than the day one, the fat content of genuine milk may often be below this standard. Indeed, according to the experience of the author during the very dry autumn of 1901, the mixed milk of dairy Shorthorn cows in the morning was far more often below than up to this standard. The cows were at pasture, but received 2 lbs. decorticated-cotton cake each per day.

"For evening milk, on the other hand, the standard for fat is very much below the average, and lower, perhaps, than the consumer has the right to expect.

"The difficulty of choosing a satisfactory standard is great, and perhaps almost insuperable, when the great differences which are often shown between evening's and morning's milk are taken into account. If cows could be milked at regular intervals of twelve hours each, these differences would be greatly diminished, but unfortunately the exigencies of the trade almost necessitate great inequalities in the intervals between milking. A different standard for morning and for evening milk would, perhaps, better meet the case; but, in practice, difficulties in administering the law would arise."

The work closes with a chapter on Miscellaneous Products used in agriculture, *i.e.*, such substances as washes, dips, sprays, disinfectants, &c.

The farmer who has had some instruction in the elements of chemistry, and who wishes to know what have been the recent developments in this science which affect agriculture, will find them in this book. Apart from the unavoidable use of technical terms the style is clear and concise, and the work will be invaluable to all students of agricultural chemistry. Mr. Ingle has just been appointed chemist to the Transvaal, and, while it is evident that we lose a teacher of ability, there can be little doubt but that his knowledge of agricultural chemistry will be extremely valuable to that colony.

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- 2.—*Nouvelle méthode de Culture forcée des arbustes et des plantes.* By A. MAUMENÉ. Paris: Librairie et Imprimerie Horticoles.

ATTENTION has recently been drawn in England to what has been designated a new development in horticulture. This new development has been brought about by the introduction of a process known as "etherisation," by which the natural resting

period of a plant is, to a slight extent, brought under the control of man. The system was first developed by M. Johannsen, Professor of Vegetable Physiology at the Agricultural College of Denmark, and was originally communicated to the Royal Academy of Copenhagen. Considerable attention has since then been bestowed upon it by German horticulturists, as a means of placing certain flowers on the market sooner than has hitherto been possible. Success has attended their efforts, and, as this trade is likely to interfere with the French trade, the subject has also received attention in France. The little brochure under notice gives details of what has been done up to October, 1902.

It is only rarely in England that plants, more particularly trees, produce two sets of flower-buds in the same year—one in the spring, one in the autumn. This, however, happened in 1902. It is accounted for in this way. If cold or severe drought check the growth of a tree for a sufficient period, and this period is subsequently followed by conditions favourable to rapid growth, then a second series of flower-buds and flowers is produced. Ordinarily the period of rest is the winter, and the period of growth the spring and summer. It has been possible by artificial heat to force forward the growth, and so obtain flowers earlier than they would have been obtained under natural conditions. It has also been possible, but very expensive, to retard the growth of plants by keeping them refrigerated during the spring or summer, and then by artificial heat obtaining growth and flowers long after those produced naturally were obtainable.

It appears likely that the introduction of etherisation will materially supplant or assist these methods. A plant submitted to the action of ether will pass into the state of rest far sooner than one not so treated. On the other hand, a plant which is in a state of rest, if submitted to the action of ether, appears to wake up, so to speak, and if then submitted to the artificial conditions of heat, &c., conducive to growth, will produce flowers far more rapidly, and, in many instances, far more perfectly than plants of the same nature, kept under similar conditions, but which have not been submitted to the action of ether.

Here it should be stated that ether is not the only substance capable of exerting this remarkable action. Chloroform and other volatile liquids appear to also exert the same power, sometimes in a less, sometimes in a greater degree than ether. But the manner in which they act is as yet uncertain.

The process is simple. The plant or plants, in the state of rest, are inserted in an air-tight box, into the top of which is placed a funnel, for the reception of the ether, which falls into

a little saucer suspended from the top immediately below the funnel. When the ether has been poured in, the stem of the funnel is securely corked, and the box must now be air-tight. The ether rapidly passes into the state of vapour, and the plant is kept in this vapour for forty-eight hours. If kept for a longer period the plant suffers, and sixty-five hours has been found by experimenters to destroy the plants. Some even cannot be kept so long as forty-eight hours.

The quantity of ether necessary varies with different plants, and the author goes fully into this subject. When the box is kept at a temperature of from 65° to 70° Fahr., the quantity varies from about 30 to 40 grammes (40 to 60 cubic centimeters) of ether per hectolitre of air space in the box, or, in English measures, approximately from 3 to 5 fluid drachms per cubic foot.

Owing to the highly inflammable nature of ether, and the fact that its vapour when mixed with air is dangerously explosive, experiments have to be carried out by daylight, and in a place where there is no flame or fire. After the lapse of the forty-eight hours, or such time as has been determined upon, the box is opened, the plants are exposed to the air for about forty-eight hours, and then again "etherised" for a further period. This second etherisation is not always necessary, but sometimes desirable. Subsequently the plants are removed to a forcing house.

It is a remarkable fact that all plants are not amenable to this treatment, and even those that are do not all act alike. So far, the best results have been obtained with Lilacs (*Syringas*), Azaleas, *Spiræas*, and Tulips.

Such is a very brief description of the process fully set forth in this brochure. That it is destined to play an important part in the future of horticulture appears highly probable, for considerable success has already attended its application by two floriculturists of Hamburg.

3.—*Agricultural Geology*: A scientific aid to Practical Farming. By PRIMROSE MCCONNELL, B.Sc. London: Crosby, Lockwood and Son. 21s.

THOSE who know Mr. Primrose McConnell personally know that this book is the result of long years of patient observation and study. The sub-title of the book is "A scientific aid to practical farming." In fact, this is a book on Geology, as it appeals to the farmer whose desire is to see what practical bearing Geology has on farming.

The author says in the preface, "The Influence of Geological structure, not only in forming the features of the country, but also in modifying the nature of the soils and the farming carried out thereon, struck me very early in my observations, and at least twenty-five years ago I began to systematically study the subject and to collect information thereon."

The first chapter, entitled "In the beginning," is one of those fairy tales of science infinitely more interesting, if only because founded upon fact, than many of the imaginary fairy tales of the present day.

The gradual formation of the earth's surface soils, and the special influence thereon of the great ice age, are charmingly described. The great influence which the ice age has had on the surface or soils of the country is shown, and the author laments over the "apathy of our Government authorities to everything connected with agriculture." As he truly says, "It is rather strange to find that a generation or two ago the study of agricultural geology should have been an important branch of science, but that in our time it should have been dropped almost entirely out of sight."

Our Board of Agriculture, though late, is at last preparing Drift maps. "But as usual, other countries lead the way in all things pertaining to the development of agricultural science, and never hesitate to vote public money to pay the expense of investigations in this line."

The origin and formation of soils forms the subject of Chapter II. "Of all the changes and modifications worked on the face of the earth by means of the disintegrating agencies which made the soil, and the various deposits of the countless strata, the greatest amount has been done by water."

But water is not the only force which has been at work; all others are described, including even the influence of bacteria; the most recently discovered agents of soil formation and amelioration. A somewhat technical but admirably illustrated chapter on the mineralogy of soils is followed by one on their "Physiography, or the physical characteristics, surrounding circumstances, and conditions of any particular field or farm. In the practical every-day life of the farmer these are often of more account than the particular composition or fertility of the soil itself." The remainder of the work is devoted to the subject, here so well accomplished, of tracing the relation between the various geological formations and the farming thereon. The subject is admirably illustrated by a series of five photographs. Finally, four chapters are devoted to the management of live stock—the horse, ox, sheep, and pig.

As indicating to some slight extent how the author works out his subject, we will quote some few isolated passages from one of these concluding chapters.

"Our cattle can all be classed on one or other of three types—*Bos urus*, *Bos longifrons*, and Mixed—and an attempt is here made to classify all those of which we know anything on this system. Modern breeds are small in number compared with those which existed long ago, for every district had its own variety in the days before railways enabled people to move about so readily and before the systematic improvements in breeding took place. In the older works on live stock—such as those of Youatt and Low—mention is made of at least sixty breeds or varieties. The names of the most of these indicate the locality where they were evolved or where they predominated at one time, and if these habitats be compared with a geological map, the following general facts will be noticeable." "Similarity of formations has produced similarity of breeds, just as differences of formations have produced differences among breeds. The converse of this, again, is true, for we find on the American Continent the prairies, a region of land very similar to Eastern Europe, and this similarity tends to wipe out the differences between breeds."

"British breeds have a tendency there to lose their characteristics, and would in time, if allowed freedom, revert back to some common form when continuously bred under one set of geological surroundings. This general tendency is well known to American farmers, and is often commented on in their farm papers. The fact is recognised that it is only by the continual importation of fresh pedigree blood from this country that the special characteristics of each breed can be kept up, for if left to themselves the animals would gradually degenerate back to some of the 'unimproved' ancestral forms, or else evolve some new 'breed' to suit the new environment."

To those who take an interest, not only in the mere pursuit of agriculture, but in knowing some of the influences which have brought about the present state of affairs in agricultural England, and what influences are still at work tending to modify, either by assisting or by combating the efforts of the farmer at improvement, we heartily recommend this book. Interesting, instructive, and giving rise to many speculative thoughts which may prove to be, if worked out, of considerable value, the work should awaken once more that interest in agricultural Geology which has been in a dormant state for a very long period.

- 4.—*Butter-making, on the Farm and at the Creamery.* By C. W. WALKER TISDALE and T. R. ROBINSON. London: John North. 1s.

WE have noticed from time to time many works on butter-making; in fact, so many have been written that one would scarcely expect another to be either necessary or justifiable. But a perusal of this concise work has satisfied us that it was worthy of being published, and is a distinct step in advance of many others.

Theological teachers maintain that life must be guided by definite principles or theories, without which man tosses about on the ocean of life like a ship without a compass. This doctrine is certainly true of every industrial pursuit, for if not guided by definite principles those who are engaged therein are utterly unable to cope with any troubles which may, and sooner or later invariably will, arise. Every guide to an industrial pursuit, such as butter-making, must therefore, if it would be complete, state not only what to do, and how best to do it, but also why it is done.

Even greater attention might have been given to this theoretical side of the subject; it is always the most difficult information for the ordinary butter-maker to obtain. We will take an example. The necessity of ventilating the churn is, of course, always insisted on. The authors do not forget to explain when, and why, namely, "to allow the escape of gases liberated from the cream." But where do these gases come from? is a question which has puzzled many a butter-maker. Gas is produced in the ordinary ripening of cream. It is not due to the lactic acid producing organisms, and this is why cream which has been Pasteurised and subsequently ripened with a really pure starter seldom becomes "sleepy." The gas produced in ordinary practice is due to organisms which ought not to be present, and the conditions which favour their introduction into the milk are the conditions which favour "sleepy cream." When these organisms are present in small numbers only ordinary care in ventilation is necessary, but when they are numerous then ventilation must be continued so long as any gas is given off; moreover, the speed of churning must not be increased to the maximum until this evolution of gas has ceased. To have entered into these minutiae, important though they may be, would, however, have been outside the scope of the authors. Their object has, evidently been conciseness. But it has sometimes led them to make statements which, though perfectly accurate, needed amplification. Thus, under breaking-stage, we read: "At this stage take the temperature and add

breaking-water accordingly." But upon what principle? Should the grains be made as hard and cold as possible, or should there be a limit, and if so what is this limit, and how is it to be attained?

The art of butter-making, apparently so simple, is one which really demands most precise knowledge if it is to be carried out scientifically, and probably at no stage of the process are the principles which should guide the operator less understood than those which affect the operations which take place between the breaking-stage and the placing of the butter grains upon the butter-worker. If, owing to its conciseness the work is not all that could be wished, it certainly goes much further than the majority of guides. We are especially pleased to note that the authors do not recommend that hard-and-fast rule, which has been the ruin of so much butter, to churn the grains to a certain size irrespective of temperature, season, and other conditions. "Like small shot in winter and nearly as big as wheat in summer" is what they recommend, and we hope that it will lead to a more rational system in the future than has been in vogue in the past.

Thus the only fault we can find with this little book is that it is so good we should like to have had more of it; and this we think will be the feeling of every one who studies it. We heartily recommend those who take an interest in butter-making to invest a shilling in this guide. However expert they may be as butter-makers, they will not find they have wasted either their money or their time by its purchase and study.

5.—*Economics in Dairy Farming.* By ERNEST MATHEWS.
London: 'Country Life' Office.

THE author of this book is so well known among farmers, especially those interested in the selection and judging of cows, that his name and experience alone will go far to ensure that his views receive the attention they deserve. He has for many years past been judge in all the most important butter tests which have been held at our principal agricultural Shows. As he says in the Preface:—

"The judge at such trials is placed in an exceptional position. He has first of all the charge of all the cattle for at least two days, and during that time has frequent opportunities of examining them. He notes the weight of the milk yielded by each cow, and the dates of their last calving. He further ascertains by churning or analysis the value of each lot of milk; and, putting these last

three items of information together, he can by examination of the cows see whether those who give the best results have any peculiarities in common ; and by taking notes and comparing the different animals he is able to find out for himself the special characteristics of a butter and milk cow.

"Having tested over 1300 cows, and taken stock of them in this way, noting their several performances, I have put down in the following pages my views generally on the matter."

We have quoted the above passage from the Preface, that readers who do not know the author by repute, or who reading his book may differ from him in their views, may know that whatever his views may be they are not based on hasty observation and rash speculation, but are the results of much work and thought.

It was necessary to lay emphasis upon these facts, for some of the author's views are likely to give rise to opposition. For example, in the second chapter the Guenon system of judging dairy cows by the escutcheon, is very fully explained and illustrated. The author is evidently of opinion that the neglect to utilise this method of judging cows is a serious drawback to would-be breeders and judges. At the same time, there can be no doubt that it has failed to "take hold" in England. Why? Partly, and probably mainly, because there has been no good and cheap guide to this system in England. Partly, because of the difficulty which a thorough study of the system presents, and lastly, because of a reason which we think Mr. Mathews is perhaps the first to have laid proper stress upon. We will quote his words :—

"The escutcheon, to put it shortly, is an indication of what a cow should yield, and its value consists in the fact that from it the dairy properties of an animal may be forecast while it is still a calf. This value, nevertheless, can be seriously affected, if not altogether destroyed, by bad management. A heifer with the very best escutcheon, can be ruined as a milker by being overfed when young. This will explain why in some cases a bad dairy cow may be found with a good escutcheon, which, but for such explanation, might throw doubt on the theory."

Then again : "It is not always easy to see the escutcheon when a cow has a very fine skin, or in the summer months when the coat is at its best, *but it can always be felt.*" The italics are ours, for this is a fact perhaps not sufficiently recognised.

But dairy farmers can easily judge for themselves whether there is or is not any value in the escutcheon.

"One proof of the value of the escutcheon is within the grasp of any breeder if he will be honest to himself.

"Let him take the milk records of several of his cows for a year, and then go into his cowsheds and compare the yields and length of time the cows have been respectively in milk with the escutcheon markings, and he will find that the best cows have the best escutcheons, and that the various markings are good indications of the milk yielded."

Greatly as the author values the escutcheon, he does not neglect the other and more commonly used signs of milking propensity, viz., shape and touch. Upon these points we may be allowed to quote two striking passages:—

"Shape.—The points of a dairy cow, so far as they relate to shape and make, may be condensed as follows:

"She should be like a wedge in shape when looked at from behind, tapering on the top as well as on the side towards the neck. Her head and neck should be fine and clean, the dewlap, if any, being thin, and her horns small. Her shoulders should be light and oblique, with high withers, free from flesh, her back lean and open-jointed. Hips wide apart, rump long and wide, with fine tail, well set on, and reaching down to her hocks. Thighs long and lean; flank thin and not fat. The udder should be full behind, extending well forward and not fleshy, with teats evenly placed and of good size, while the milk veins should be large and easily traced along her stomach.

"Touch.—The dairy cow differs, however, in other particulars from the beef animal, and notably in the feel of her skin. To estimate the value of a cow, whether for milk or butter production, she should be 'handled,' but not as if she were being judged for a fat stock prize. To 'handle' a dairy cow properly, one must feel the skin behind the last rib at a point about half-way between the hip bone and the flank, rubbing it gently backwards and forwards between the finger and thumb; when the touch can be easily appreciated.

"If the skin is thick and mellow, the cow is not suitable for the dairy, as her milk will be of poor quality, the tendency of such an animal being to put on flesh."

"If thin and wiry, other conditions—such as shape—being favourable, she will give a good quantity of milk, but of poor quality; she will also be an unprofitable cow to fatten.

"If thin and mellow, she will yield milk of good quality, and will probably put on flesh when dry."

"A dairy cow with a thick, wiry skin is not worth buying.

"Judging.—In comparing the relative merits of dairy cattle by touch, it is important to handle each animal in the same place, as the hide gets thicker as it approaches the shoulder, so that to handle one cow close behind the shoulder, another above the ribs, and a third above the flank, is not fair to the animals whose respective merits are being compared."

We are pleased to note that the author is not a believer in the general purpose cow. We have always thought the general purpose cow could be likened to the man who was "Jack of all trades, and master of none."

We have dealt so fully with this interesting chapter that the others must needs be briefly noticed. The first relates to milk, its composition, fluctuations, and peculiarities, and the most important and most recently acquired knowledge of these matters is concisely stated.

A chapter on the feeding of cows brings forth from the author an opinion which is novel. He attributes the known poor milking qualities of certain breeds and individual animals largely to improper feeding, more especially during the period of the rearing of the calf. But the evil effect of feeding is not confined to this period. Cows may subsequently be either underfed or overfed or injudiciously fed. In summing up this chapter, which is full of views that will be of more than usual interest, the author says:—

"These remarks on feeding and the effect of giving too rich a diet to cows in milk may not be generally approved, but as I believe them to be in the main correct, I have expressed them without reserve, since, whether right or wrong, I shall at any rate have called attention to a subject which is well worthy of consideration by farmers and breeders of dairy stock."

The remaining chapters are devoted to a consideration of the economical disposal of milk, butter-making, and the keeping of accounts. But we have already quoted sufficiently from the pages of this book to indicate its character, and its intrinsic value to the dairy farmer who is willing to study.

6.—*Chemistry of the Farm.* By R. WARINGTON, F.R.S.
London: Vinton and Co., Limited. 2s. 6d.

THIS is a new edition of a book which is already deservedly well known. We need therefore say no word of praise regarding it, for such praise would be superfluous. Our reason for

noticing this, the seventh edition, is that the book has been revised, and a considerable amount of new matter added, the largest changes being made in the sections relating to the nutrition of animals. The author says :—

“These alterations have been rendered necessary by the publication of the epoch-making investigations of Zuntz and Hagemann on the nutrition of the horse, and of the equally important researches of Kellner, Köhler, and their associates, on the nutrition of the ox. By these laborious researches many important problems have been solved, and a foundation laid on which a really accurate science of feeding may be constructed.”

In the new work of these German investigators, both the value of the food and the work which it accomplishes is reckoned in units of heat.

The unit of heat employed is the “calorie,” which represents the quantity of heat required to raise one gram of water from 0 to 1° on the scale of the centigrade thermometer. A Calorie one thousand times larger than this (spelt with a capital C) is employed for the expression of large quantities of heat, and is used throughout by the author.

We will quote some of the results of these later investigations :—

“Kellner ascertained, by numerous experiments with oxen, the net heat value to the animal of 1 gram of the digestible matter in various foods. His results were as follows :—

Food.	Full Value.	Actual Heat Value to Ox.
	Calories.	Calories.
Earthnut Oil	8·8	8·8
Wheat Gluten	5·8	4·7
Starch	4·1	3·7
Meadow Hay	4·5	3·6
Oat Straw	4·5	3·7
Wheat Straw	4·5	3·3

But the whole of this value of the food, as shown in the last column, is not available for increase.

“Before these digested foods can be utilised for the production of fatty or nitrogenous tissue, a part is consumed to provide the energy required for the digestion of similar food daily received by the animal ; a part is also consumed during the chemical and mechanical processes involved in the production of tissue.”

The loss of energy in these production processes varies with each substance, as is shown in the following Table :—

					Per cent. Calories lost.
Earthnut Oil	..	..	..	..	43·7
Wheat Gluten	..	..	..	..	55·3
Starch	..	..	..	..	41·1
Meadow Hay	..	..	..	..	58·5
Oat Straw	..	..	..	..	62·4
Wheat Straw	..	..	..	..	82·2

“By a very happy experiment Kellner showed that the very low results yielded by straw were not due to its chemical nature, but to its mechanical condition. He used in some of his experiments the straw-pulp prepared by paper manufacturers, by boiling rye straw under high pressure with an alkaline solution: of this softened disintegrated cellulose 88 per cent. was digested by the oxen, and the digested matter yielded as large a return in increase as was obtained from starch or sugar.”

We do not think it is necessary to quote further from the new matter in this volume to indicate its great interest. The practical farmer can scarcely fail to study such scientific results as these without at once seeing their practical bearing. Do they not bring home to us the great necessity of not merely giving enough food to our stock—and food of proper chemical composition—but further the necessity of having this food in a suitable condition for easy digestion?

The excessive hardness of cakes has long been recognised as a drawback. Have all farmers yet learnt to grind cake sufficiently small before feeding it? If so much nutriment is consumed by the animal in merely performing the task of digestion, how necessary it must be in economical feeding to diminish this task so far as possible. And again, may we not see in these results another argument in favour of fermenting, or mixing, and softening by moisture and heat the chopped straw which is fed to stock. This is a custom followed by the best breeders, but capable of much wider application than it at present receives.

We heartily recommend this new edition to our readers, more especially to those who are interested in the economical feeding of stock.

7.—*Agricultural Bacteriology, a study of the relation of Bacteria to Agriculture.* By H. W. CONN, Ph.D. London: Rebman, Limited. 11s.

DR. CONN is well known to the readers of the ‘Journal,’ several of his writings or discoveries having been noticed in its pages in past years. This is the largest and most complete work which

has yet appeared from his pen, and brings the reader well up to date in this modern and interesting study.

The term modern is after all only relative, for bacteria have been known some two hundred years, studied with some degree of continuity for fifty years, and more especially for the last twenty.

But agricultural bacteriology is almost a study of the last twelve or fifteen years at most, and it has become complicated, especially in its relation to the dairy, by "a growing conviction that a considerable number of phenomena, hitherto attributed to bacteria, are directly due to a class of *chemical ferments* called enzymes. These enzymes are sometimes produced by bacteria, but in other cases by organisms totally unrelated to bacteria." But we do not as yet know how commonly these enzymes or chemical ferments are concerned in agricultural processes, and even where they do occur it is found that in some cases they are intimately associated with true bacteriological action.

The word bacteria is in the minds of most men associated mainly with disease and as things to be avoided. The author truly says they "have obtained a reputation which they have not deserved." To condemn a whole group of plants because some of them are poisonous is manifestly illogical. "These organisms are not only excessively abundant in nature, but they play a part in the phenomena of living things which has been wholly unexpected." "Farming without the aid of bacteria is an impossibility."

Such is the remarkable thesis with which the author starts. At first sight it seems almost an incredible position to take up. But as the reader proceeds with his study of these pages he becomes gradually convinced of the truth of this dictum. In the soil, and in water, in manure, in the dairy, in the preparation of many farm products and in causing the principle diseases to which stock are liable, bacteria play an important rôle, and what that rôle is, this work endeavours to explain in popular language, as free as possible from technical terms.

Much of the information which it gives cannot easily be found even by the student, much less by the farmer, for it is culled from a vast number of English, French, and German works, many of which are difficult to obtain. At the end of each section the author gives a list of the authorities drawn upon. As indicating the enormous strides which have been made in this study, we may mention that the list of works referring to bacteria in relation to dairying contains alone no less than 110 titles of original papers.

To the student of bacteriology in relation to farming and to the farmer this book will supply a distinct want.

Bath and West and Southern Counties Society.

PLYMOUTH MEETING, 1902.

JUDGES.

HORSES.

- Agricultural.**—W. CROSLAND, Estate Office, Buscot Park, Faringdon.
Hunters.—M. ANGAS, Manor House, Whissendine, Oakham.
Hackneys and Ponies.—J. GRIGGS, South Creak, Norfolk.
Harness Horses and Jumping.—G. GORDON, Wincombe Park, Shaftesbury; C. N. P. PHIPPS, Chalcot, Westbury, Wilts.

CATTLE.

- Devon.**—W. S. PERRY, Crelake, Tavistock.
South Devon.—B. W. COAKER, Old Newnham, Plympton St. Mary.
Shorthorn.—R. L. ANGAS, Blenheim, Woodstock; J. PETER, Berkeley Castle Estate Office, Berkeley, Glos.
Hereford.—C. WILLIAMS, Glenthorne, Holmer, Hereford.
Sussex.—A. HEASMAN, Court Wick, Littlehampton, Sussex.
Red Polled.—A. D. BRUCE, Estate Office, Elvetham Park, Winchfield, Hants.
Aberdeen-Angus.—Rev. C. BOLDEN, Preston Bissett, Buckingham.
Jersey.—J. H. SHORE, Whatley House, Frome; E. MATHEWS, Chequer's Mead, Potter's Bar.
Guernsey.—H. J. GIBBS, Milford, Salisbury.
Kerry and Dexter.—F. N. WEBB, Babraham, Cambridge.

SHEEP.

- Cotswold.**—W. T. GARNE, Aldsworth, Northleach.
Devon Long-wooled.—W. GREENWAY, Manor Farm, Halse, Taunton.
South Devon.—B. BUTLAND, Leigham, Plympton.
Southdown.—H. SENIOR, Tarrant Rushton, Blandford.
Hampshire Down.—E. LYNE, Hillus, Compton, Winchester.
Shropshire.—T. S. MINTON, Montford, Shrewsbury.
Oxford Down.—C. BRYAN, Southleigh, Witney.
Exmoor.—R. J. STRANGER, Court House, North Molton.
Dartmoor.—R. S. LUSCOMBE, Wisdone, Cornwood, Ivybridge.
Somerset and Dorset Horned.—J. KIDNER, Nynhead, Wellington, Somerset.

PIGS.

Berkshire.—E. BURBIDGE, South Wraxall, Bradford-on-Avon.

Large Black.—W. ORCHARD, Trethorne, St. Thomas, Launceston.

Large, Middle, and Small White or Black, and Tamworth.—J. BARROW, Elvaston House, Borrowash, Derby.

POULTRY.

W. B. TEGETMEIER, 16, Alexandra Grove, North Finchley; P. PERCIVAL, Somerset Court, Brent Knoll, Somerset.

• **PRODUCE.**

Cider.—J. H. HILL, New Take, Staverton, Totnes.

Cheese.—FRANCIS MEADE, Langport.

Butter and Cream.—Professor CARROLL, Royal Albert Farm, Glasnevin, Dublin.

BUTTER-MAKING, SHOEING, AND MILKING.**BUTTER-MAKING.**

Professor CARROLL, Royal Albert Farm, Glasnevin, Dublin; D. A. GILCHRIST, B.Sc., University Extension College, Reading.

SHOEING.

T. AUBREY, F.R.C.V.S., Bath.

SHEARING.

C. NORMAN, Thurloxton, Taunton.

MILKING.

R. J. HOSKINS, Hill View, Beard Hill, Shepton Mallet.

PRIZE AWARDS, 1902.

* * An animal designated in this list as the "reserve number" is entitled, *conditionally*, to succeed to any prize that may become vacant in its class by reason of the animal placed above it by the Judges failing afterwards to qualify.

† Animals, where not otherwise stated, may be considered to have been bred by the Exhibitor.

ABBREVIATIONS EXPLAINED:—S., sire; d., dam; s. of d., sire of dam; y., year; m., month; w., week; d., day; R., Reserve; V. H. C., Very Highly Commended; H. C., Highly Commended; C., Commended.

All ages calculated to May 30, 1902.

HORSES.

FOR AGRICULTURAL PURPOSES.—SHIRE.

(Registered or eligible for registration in the Shire Horse Society's Stud Book.)

CLASS 1.—*Shire Stallion, foaled before 1900.* [4 entries.]

I. (£20.)—F. JEFFERY, Manor Hotel, Lonsland, Yelverton, Devon, bay, **Duncan III.** (13,006), 12 y., bred by J. Whittingham, Coton-in-the-Elms, Burton-on-Trent; s., Albert Edward (5467); d., Coton Duchess (11,967); s. of d., Regulation (3970).

II. (£10.)—The DIRECTORS OF CONVICT PRISONS, Princetown, bay, **Royal Sovereign IV.** (19,095), foaled 1899, bred by W. Wilson, Lowdham Lodge, Nottingham; s., Markeaton Royal Harold (15,225); d., Lady Guest (24,094); s. of d., Balsover Prince (10,987).

R.—F. JEFFERY, brown, **Holcombe Conqueror**, 7 y., bred by B. J. Bucknell, Holcombe Barton, Wellington, Somerset; s., Gurth II. (14,073); d., Holcombe Blossom (16,787); s. of d., Hitchin Conqueror (4458).

CLASS 2.—*Shire Stallion, foaled in 1900.* [9 entries.]

I. (£20.)—LORD ROTHSCHILD, Tring Park, Tring, Herts, bay, foaled 1900, bred by Wakefield Bros., Moor Green, Nottingham; s., Old Warden Royal Harold (16,300); d., Beauvale Merry Lass (19,290); s. of d., Merry Lad (2626).

II. (£10.)—LORD LLANGATTOCK, The Hendre, Monmouth, black, **Hendre Heirloom** (19,683), foaled in 1900; s., Prince Harold (14,228); d., Hendre Baroness (18,313); s. of d., Dunsmore Barrier (13,010).

III. (£5.)—Sir W. H. WILLS, Bart., Coombe Lodge, Blagdon, near Bristol, bay, **Conqueror of Waresley** (19,509), foaled 1900, bred by W. H. O. Duncombe, Waresley Park, Sandy; s., Waresley Triumph (16,453); d., Packington Brave Girl; s. of d., Mesham Chief (6124).

R.—Sir J. B. MAPLE, Bart., M.P., Childwick, St. Albans, Herts, bay, **Childwick Harold**, foaled in 1900; s., Markeaton Royal Harold (15,225); d., Pratts Buttercup (18,744); s. of d., Bury Victor Chief (11,105).

iv *Prizes awarded to Horses for Agricultural Purposes.*

CLASS 3.—Shire Colt, foaled in 1901. [8 entries.]

I. (£15.)—**LORD ROTHSCHILD**, Tring Park, Tring, Herts, grey, **The Lad**, foaled May 2, 1901; s., Hertfordshire Lad (18,800) d., Hendre Merry Lass (26,134); s. of d., Prince Harold (14,228).

II. (£10.)—**H. OAKLEY**, Dewstow, near Chepstow, brown, **Dewstow Pioneer**, foaled Easter Sunday, 1901; s., Pioneer VII. (16,890); d., Childwick Victoria (2565); s. of d., Eastern Harold (12,898).

III. (£5.)—**R. W. HUDSON**, Danesfield, Marlow, Bucks, bay, **Ware Masterman**, foaled 1901, bred by S. Leggate, Dogdyke, Lincoln; s., Sheffield Armour Plate (17,616); d., Dogdyke Pink (28,362); s. of d., Great Tom II. (11,514).

R.—**MESSRS. MARSHALL**, Coombe Farm, Plympton, bay, **Lord of the Manor** (vol. xxiv.), foaled June 1, 1901.

CLASS 4.—Shire Mare and Foal, or in-Foal. [4 entries.]

I. (£20.)—**R. W. HUDSON**, Danesfield, Marlow, Bucks, bay, **Nateby Aurea**, foaled 1894, bred by J. Stuart, St. Michael's, Garstang, Lancashire; s., Parkside (13,436); d., Belle (19,306); s. of d., Cromwell (2415); with foal by Danesfield Prince (17,914).

CLASS 5.—Shire Filly or Gelding, foaled in 1899. [4 entries.]

I. (£10) and Gold Medal.*—**R. W. HUDSON**, Danesfield, Marlow, Bucks, bay, **Wern Blossom** (34,420), foaled 1899, bred by T. Gittens, Pool Quay; s., Moors Phenomenon (16,833); d., Wern Blossom (30,402); s. of d., Potentate (Moors).

II. (£5.)—**LORD LLANGATTOCK**, The Hendre, Monmouth, bay, **Birdsall Buttercup**, foaled 1899, bred by Lord Middleton, Birdsall, York; s., Menestrel (14,180); d., Butterfly (16,363); s. of d., Donovan (9764).

R.—**T. R. C. CUNDY**, Devonshire Dairy, Benbow Street, Devonport, **Harold**, foaled June, 1899, bred by J. H. Palmer, Colcharton, Tavistock, Devonshire; s., Amazement; d., Duchess; s. of d., Rutland Champion.

CLASS 6.—Shire Filly or Gelding, foaled in 1900. [6 entries.]

I. (£10) and R. for Gold Medal.*—**LORD LLANGATTOCK**, The Hendre, Monmouth, chestnut, **Hendre Marguerite**, foaled 1900; s., Prince Harold (14,228); d., Kelvedon Marguerite (26,253); s. of d., Curf Duncan (15,070).

II. (£5.)—**EARL EGBERTON OF TATTON**, Tatton Park, Cheshire, bay, **Active Girl**, foaled 1900, bred by Lord Rothschild, Tring Park, Tring; s., Anchorite (16,488); d., Saxon Girl (vol. xvi. 18,842); s. of d., Norman Conqueror (7940).

III. (£3.)—**J. STOOKE**, Stokenham, Kingsbridge, Devon, brown, **Queen**, foaled April, 1900, bred by — Gethin, Welshpool; s., Moors Ishmeal (16,832); d., Darling; s. of d., Potentate (12,086).

* Given by the Shire Horse Society, a Gold Medal, value £10, for Best Mare or Filly, in Classes 4, 5, 6, or 7, under Conditions 46, and to the Breeder of the Winner under the Conditions stated, a prize of £5.

Prizes awarded to Hunters.

V

CLASS 7.—*Shire Filly or Gelding, foaled in 1901.* [5 entries.]

I. (£10.)—H. OAKLEY, Dewstow, near Chepstow, black, **Dewstow Matchmaker**; s., Prince Harold (14,228); d., Matchmaker (12,909); s. of d., Kilham's Matchless (4500).

II. (£5.)—LORD LLANGATTOCK, The Hendre, Monmouth, bay, **Hendre Madrigal**, foaled 1901, bred by T. J. Dutton, Beeches, Saltby, Chester; s., Hendre Baronet (16,714); d., Sandycroft Belle; s. of d., Calvert Combination.

R.—R. W. HUDSON, Danesfield, Marlow, Bucks, grey, **Danesfield Resound**, foaled 1901; s., Prince Harold (14,228); d., Resound (15,495); s. of d., Blyth Echo (2991).

ANY OTHER AGRICULTURAL BREED.

CLASS 8.—*Mare and Foal, or in-Foal.* [6 entries.]

I. (£10.)—J. MANN, South Barton, Brixton, Plymouth, light bay, **Damsel**, foaled May 14, 1896; in-foal.

II. (£5.)—C. MARSHALL, Coombe Farm, Plympton, bay, foaled May 28, 1899; with foal.

III. (£3.)—G. W. HORSWELL, Burraton Barton, Pennycross, bay, **Madam**, foaled May 19, 1896; s., Nailstone Umpire (vol. xvi.); d., Madam; s. of d., Lord Stanhope; in-foal to Odstane Herald (18,261).

R.—J. CLEAVE, 26, Harbour Avenue, St. Budeaux, dark chestnut, **Magpie**, foaled 1891, bred by G. Lewis, Ercall Park, Shropshire; s., Lincolnshire II.; d., Smart; with foal.

ANY AGRICULTURAL BREED.

(The First Prize in Class 9 was given by H. Y. B. Lopes, Esq.)

CLASS 9.—*Mare and Foal, or in-Foal, the property of a tenant farmer residing in Devon or Cornwall, best suited for breeding Horses for Agricultural purposes.* [7 entries.]

I. (£10 10s.)—J. MANN, South Barton, Brixton, Plymouth, light bay, **Damsel**, foaled May 14, 1896; in-foal.

II. (£3.)—C. MARSHALL, Coombe Farm, Plympton, bay, foaled May 28, 1899; with foal.

R.—G. W. HORSWELL, Burraton Barton, Pennycross, bay, **Madam**, foaled May 19, 1896; s., Nailstone Umpire (vol. xvi.); d., Madam; s. of d., Lord Stanhope; in-foal to Odstane Herald (18,261).

HUNTERS.

CLASS 10.—*Hunter Mare and Foal, or in-Foal.* [8 entries.]

I. (£20) and Gold Medal.*—T. C. and L. H. DOWNES, Court House, Richard's Castle, Ludlow, chestnut, **Rustic Gem**, bred by S. Jones, Leicester; s., Crevasse; d. by Macheath; with foal by Spindle Leg.

* Given by the Hunters' Improvement Society, a Gold Medal, or £5 and a Bronze Medal, for the Best Hunter Brood Mare (by a Thoroughbred or Registered Hunter Sire, and in-Foal to, or with Foal at-foot by, a Sire of similar Breeding) in Class 10, not having previously won the Hunters' Improvement Society's Gold Medal as a Brood Mare in 1902, under Conditions 47. Prize winners in the Class only were eligible for the Medal.

II. (£10.)—S. W. ADAMS, Townleigh, Lew Down, North Devon, bay, **Call Duck**; s., Bayminster; s. of d., The Mallard; in-foal.

III. (£5.)—C. W. FRANCIS, Horsington, Templecombe, chestnut, **Clonsilla**; s., Thoroughbred; d., Clonsilla (vol. viii. 1333 H.B.); with foal by Pantomime.

R.—J. FORD, Newton Ferrers, Plymouth, black, **Court Royal**, foaled May 12, 1895, bred by W. Gribble, Callington, Cornwall; s., Hartshole; d., Stoke Clinsland; s. of d., Neophite; in-foal.

CLASS 11.—Hunter Mare or Gelding, foaled in 1898. [17 entries.]

I. (£20) and Silver Medal.*—J. H. STOKES, Nether House, Great Bowden, bay gelding, **Haddon**, bred by B. Butlin, Ashby St. Ledgers, Rugby; s., Herculean Chief; s. of d., Hyperion.

II. (£10.)—W. PRIDE-JONES, Cleeve Lodge, Downend, near Bristol, chestnut gelding, **Tommy Atkins**, foaled 1898, bred by L. Taylor, Biddestone, near Chippenham; s., Tom Cribb; d., Golden Stream (1892).

III. (£5.)—J. PETHICK, Norley House, Plymouth, bay gelding, **Port**, foaled 1898, bred by the late T. Bennett, Cobham Court, Cobham; s., Kenmoral; s. of d., Eglamore.

R.—H. B. CORY, Druidstone, Castleton, near Cardiff, bay, foaled 1898.

CLASS 12.—Hunter Filly or Gelding, foaled in 1899. [9 entries.]

I. (£15) and Special (£5 5s.)†—Mrs. CALMADY, Great Tree, Chagford, chestnut gelding, **Mutineer**, foaled April 21, 1899; s., Yard Arm; d., Puritan's Daughter (H.S.B., 1902); s. of d., Huguenot.

II. (£10.)—Major-Gen. J. JAGO-TRELAWNY, Coldrenick, Menheniot, Cornwall, chestnut filly, **Salome**, foaled July 19, 1899; s., Springald; d., Roxy (H.I.S.S.B.); s. of d., Hot Shot.

III. (£5.)—T. HORE, Lanival, Bodmin, bay gelding, **Jupiter**, foaled May 20, 1899, bred by Capt. Serjeant, St. Benets, Bodmin; s., King Ebor.

R.—A. W. BEER, Higher Chaddlewood, Plympton, Plymouth, bay gelding, **Huntsman**, foaled May 25, 1899; s., Belleville; d., Lady Jane; s. of d., Blue Ruin.

CLASS 13.—Hunter Filly or Gelding, foaled in 1900. [9 entries.]

I. (£10) and **R. for and Silver Medal.***—W. MADGE AND SONS, Blagdon Court, Ashwater, chestnut gelding, **Gayboy**, foaled August 16, 1900; s., Vitzes; d., Gay Lass (2248, vol. ix. part 1); s. of d., Yardarm.

II. (£7.)—Major-Gen. J. JAGO-TRELAWNY, Coldrenick, Menheniot, brown gelding, **Spartacus**, foaled April, 1900; s., Springald; d., Rhea (H.I.S.S.B.); s. of d., Pearlfinder.

* Given by the Hunters' Improvement Society, a Silver Medal, for the Best Hunter Mare or Gelding of any age, not having previously won the Society's Silver Medal under this scheme in 1902, bred by a Thoroughbred or Registered Hunter Sire out of a Registered Mare or a Mare qualified for Registration in the next volume, under Conditions 49. Prize winners in the Classes only were eligible for the Medal.

† Given by R. Bayly, Esq., for Best Exhibit in Class 11 or 12, calculated to carry not less than 15 stone.

III. (£3.)—C. M. C. WAKELY, Ruggs, Kilminster, Axminster, Devon, bay gelding, **Hero**, foaled May 26, 1900; s., Abelard; d., Shamrock (vol. ix. H.P.B., 2514).

R.—J. M. WOODLEY, Degembris, Newlyn East, bay, **Empress**, foaled May 10, 1900; s., King Ebor; d., Potentate.

CLASS 14.—Hunter Filly, Colt, or Gelding, foaled in 1901.

[10 entries.]

I. (£10.)—Major-Gen. J. JAGO-TRELAWNY, Coldrenick, Menheniot, Cornwall, bay gelding, **Sesostria**, foaled May, 1901; s., Subduer; d., H. M. (H.I.S., L.B.R., 1900).

II. (£7) and Silver Medal.*—G. P. FINCH, The Briar's, Alphington, Exeter, chestnut colt, foaled May 19, 1901; s., Maxwell; d., Rosebede (vol. ix., p. 109, 2496); s. of d., The Bustard.

III. (£3) and Silver Medal.†—W. MADGE AND SONS, Blagdon Court, Ashwater, bay filly, **Blagdon Gem**, foaled May 28, 1901; s., Maxwell; d., Princess.

R.—C. M. C. WAKELY, Ruggs, Kilminster, Axminster, Devon, bay filly, **Ballet Girl**, foaled May 26, 1901; s., Pantomime (vol. xvii. p. 699); d., Shamrock (vol. ix., H.P.B., 2514).

HACKNEYS.

(Classes 15 to 19 were for Horses registered or eligible for registration in the Hackney Horse Society's Stud Book.)

CLASS 15.—Mare and Foal, or in-Foal. First Prize, £15—second, £10—third, £5.

[No ENTRY.]

CLASS 16.—Hackney Mare or Gelding, foaled before 1898.

[5 entries.]

I. (£10.)—W. J. TATEM, Pen-y-lan, Cardiff, black gelding, **Astonishment**.

II. (£5.)—E. JONES, Manoravon, Llandilo, bay, **Lady Athol**, foaled 1896, bred by R. Kerrison, North Elmham, East Dereham, Norfolk; s., Athol Lad (4615); d., Magnet (657, F.S.); s. of d., Washington (852).

R.—W. MORTIMORE, St. Thomas, Exeter, chestnut mare, **Miss Cadet** (7136), foaled 1892, bred by M. Wilson, 12, Fenchurch Avenue, London; s., Cadet (1251); d., Happy Thought (673); s. of d., Model 2nd (460).

* Given by the Hunters' Improvement Society, a Silver Medal, for the Best Hunter Colt by a Thoroughbred or Registered Hunter Sire out of a Mare registered in the Hunter Stud Book, or entered for the next volume, exhibited in Class 14, and not having previously won the Society's Silver Medal under this scheme in 1902, under Conditions 50. Prize winners in the Class only were eligible for the Medal.

† Given by the Hunters' Improvement Society, a Silver Medal, for the Best Hunter Filly by a Thoroughbred Horse or Registered Hunter Sire in Classes 12, 13, or 14, not exceeding three years old (foaled in 1899, 1900, or 1901), under Conditions 48. Prize winners in these Classes only were eligible for the Medal.

CLASS 17.—Hackney Mare or Gelding, foaled in 1898 or 1899.

[2 entries.]

I. (£10).—Mrs. R. T. THORNTON, Middleton Hall, Brentwood, Essex, bay gelding, **Duke of Cranbrook**, foaled 1898, bred by the late E. Edmondson, Knowle, Warwick; s., Garton Duke of Connaught; d., Lady Cranbrook; s. of d., All Fours.

CLASS 18.—Hackney Filly or Gelding, foaled in 1900. [3 entries.]

I. (£10) and Special.*—W. OPPENHEIMER, Riversdale, Thames Ditton, Surrey, chestnut filly, **Knowle Belinda**, foaled May 18, 1900, bred by the late E. Edmondson, Springfield Hall, Knowle, Warwick; s., His Majesty; d., Garton Birthday; s. of d., Garton Duke of Connaught.

II. (£5).—A. JOHNSON, Woodlands, Bishop's Stortford, black filly, **Inventress** (14,454), foaled March 23, 1900; s., County Member (948); d., Primrose Alphabet (14,669); s. of d., Anconeus 2nd (1975).

R.—Mrs. W. OPPENHEIMER, Riversdale, Thames Ditton, Surrey, chestnut filly, **Ala Girl**, foaled March 26, 1900, bred by the late E. Edmondson, Springfield Hall, Knowle, Warwick; s., Conquest II.; d., Princess Dyra; s. of d., Garton Duke of Connaught.

CLASS 19.—Hackney Filly, Colt, or Gelding, foaled in 1901.

[5 entries.]

I. (£10) and R. for Special.*—R. T. THORNTON, Middleton Hall, Brentwood, chestnut filly, **Middleton Rosa**, foaled 1901; s., Rosador; d., Bright Maid; s. of d., Ganymede.

II. (£5).—A. JOHNSON, Woodlands, Bishop's Stortford, chestnut filly, **Let 'em All Come**, foaled April 4, 1901; s., Royal Danegelt (5785); d., Primrose Alphabet (14,669); s. of d., Anconeus 2nd (1975).

R.—W. MORTIMORE, St. Thomas, Exeter, chestnut stallion, **Stroudleigh**, foaled April 30, 1901; s., Leyswood Emecote (7149); d., Magnolia (11,239); s. of d., Agility (2799).

CLASS 20.—Hackney Mare or Gelding, under 15-3 hands, the property of a bona fide tenant farmer, residing in Devon or Cornwall. [10 entries.]

(The Prizes in Class 20 were given by the Plymouth Local Committee.)

I. (£10).—T. TOZER, The Barton, Huxham, near Exeter, chestnut, **Primrose Lady**, 6 y.; s., Highland Rufus.

II. (£5).—W. E. LUSCOMBE, Warleigh Barton, Crown Hill, R.S.O., chestnut filly, **Gladys**, foaled May 14, 1898; s., Dry Toast.

III. (£2).—W. MUTTON, jun., Strylands, Altarnun, Launceston, black-brown gelding, **Rodney**, foaled April 3, 1898; s., M.P., Junior; d., Bun; s. of d., Model.

R.—A. H. RETALLICK, Tremoor, Bodmin, Cornwall, dark bay or brown mare, **Queenie**, foaled May 1, 1897, bred by J. Williams, Treator Place, Padstow, Cornwall; s., Beno; d., Princess; s. of d., Old Lipton.

* Given by the Hackney Horse Society, a Gold Medal (value £10), for the Best Mare or Filly exhibited in Classes 15 to 23, under Conditions 51, stated to Prize Schedule.

PONIES.

CLASS 21.—*Pony Mare, over 13 2 and not over 14-2 hands, with foal at foot or to foal in 1902.* [2 entries.]

I. (£10.)—J. O. MUNTZ, Goodameavy, Yelverton, dark brown, **Lily of Laguna** (P.P.S.B., 979), foaled 1893; in-foal.

R.—W. MORTIMORE, St. Thomas, Exeter, grey, **Lady Gay**, foaled 1890, bred by The Directors of H.M. Convict Prison, Dartmoor; s., Royal George; d., Rose of Devon; with foal by Leyswood Emscote.

CLASS 22.—*Pony Mare or Gelding, 4 years old or over, exceeding 13 and not exceeding 14-2 hands.* [8 entries.]

I. (£10.)—Mrs. R. T. THORNTON, Middleton Hall, Brentwood, bay mare, **Hutton Mimosa**, foaled 1895; s., Vigorous; d., Gondola; s. of d., Confidence.

II. (£5.)—W. J. TATEM, Pen-y-lan, Cardiff, black mare, **Princess**, foaled 1894; s., Recruit; d., Black Bess.

III. (£3.)—E. BAXTER, Hutton Stud, Brentwood, bay mare, **Musk** (8323), foaled 1893, bred by E. Farnaby, Lockington, Beverley, Yorks; s., Cation (2398); d., Matron (1697); s. of d., Lord Derby II. (417).

R.—E. BAXTER, bay mare, **Wee Jean** (10,603), foaled 1895, bred by J. McMeehen, Nethertou, Newton Mearns, Renfrew; s., Goldfinder 6th (1791); d., Bonnie Jean (375); s. of d., Sir George (778).

V. F. C.—T. TOZER, The Barton, Huxham, near Exeter, chestnut, **Primrose Lady**, 6 y.; s., Highland Rufus.

CLASS 23.—*Pony Mare or Gelding, 4 years old or over, not exceeding 13 hands.* [9 entries.]

I. (£10.)—E. JONES, Manoravon, Llandilo, dark roan, **Megania**, foaled 1896; s., Kings Flyer (5247); d., Megan (1010, F.S.).

II. (£5.)—E. BAXTER, Hutton Stud, Brentwood, Essex, black and white mare, **Black and White** (13,277), foaled 1897, bred by W. Stewart, Castle Harm, Holme; s., Beric (5102); d., Magpie; s. of d., Sir George (778).

III. (£3.)—W. J. TATEM, Pen-y-lan, Cardiff, black mare, **Little Eva**, foaled 1897.

R.—W. MUTTON, jun., Strylands, Altarnum, Launceston, brown, **Dandy Dick**, foaled 1896, bred by G. Jenkin, Halworthy, Camelford; s., Model; d., Jenny.

CLASS 24.—*Pony most suitable for Polo.* [4 entries.]

(Given by J. Bayly, Esq.)

I. (£5 5s.)—Major G. COLLIS, Raglan Barracks, Devonport, bay gelding, **The Carpenter**.

R.—W. E. LUSCOMBE, Warleigh Barton, Crown Hill, R.S.O., chestnut filly, **Gladys**, foaled May 14, 1898; s., Dry Toast.

HARNESSES.

CLASS 25.—Mare or Gelding, 15 hands or over. Driven in harness on the second day of Show. [12 entries.]

I. (£10.)—A. J. BUTCHER, Victoria Hotel, Bristol, chestnut, **Bristol Squire**.

II. (£5.)—H. M. ROGERS, Nansloe, Helston, Cornwall, chestnut, **Recruit**, foaled 1897, bred by Capt. Cullen, Nottingham; s., Grand Cadet; d., Romance; s. of d., Rarey.

III. (£2.)—E. BAXTER, Hutton Stud, Brentwood, Essex, brown, **Amaze** (7332), foaled 1898, bred by J. Grisewood, Holme, York; s., Pomfret Performer (5749); d., Duchess (6595); s. of d., Holme Beaconsfield (2516).

R.—W. LAMYON, Treludderow, Newlyn East, bay, **Lady Lofty** (15,086); s., Benno; d., Polly; s. of d., Garibaldi.

CLASS 26.—Pair of Carriage Horses (Mares or Geldings) 15 hands or over. Driven in double harness on the second day of Show. [7 entries.]

I. (£10.)—E. BAXTER, Hutton Stud, Brentwood, Essex, black, **Midnight Echo**, foaled 1898, bred by M. Cruise, Belwell House, Sheffield; s., Comrade II. (3508); and his brown, **Amaze** (7332), foaled 1898, bred by J. Grisewood, Holme, York; s., Pomfret Performer (5749); d., Duchess (6595); s. of d., Holme Beaconsfield (2516).

II. (£5.)—J. PETHICK, Norley House, Plymouth, roan mare and gelding, **Perry and Porter**.

III. (£2.)—W. MORTIMORE, St. Thomas, Exeter, chestnut mare, **Miss Cadet** (7136), foaled 1892, bred by M. Wilson, 12, Fenchurch Avenue, London; s., Cadet (1251); d., Happy Thought (673); s. of d., Model 2nd (460); and his grey gelding, **Gay Horace**, foaled 1897; s. of d., Sir Horace.

R.—Mrs. R. T. THORNTON, Middleton Hall, Brentwood, Essex, bay gelding, **Duke of Cranbrook**, foaled 1898, bred by the late E. Edmondson, Knowle, Warwick; s., Garton Duke of Connaught; d., Lady Cranbrook; s. of d., All Fours; and her bay gelding, **Middleton Prince**, 3 y.; s., Enthorpe Duke; d., Queenie.

CLASS 27.—Mare or Gelding, under 15 hands. Driven in harness on the third day of Show. [13 entries.]

I. (£10.)—E. BAXTER, Hutton Stud, Brentwood, Essex, bay, **Miss Howard** (12,134), foaled 1893, bred by W. Rook, Bielby, Everingham, Yorks; s., Sensation VI. (3265); d., Bielby Princess (5034); s. of d., King Charley (392).

II. (£5.)—T. D. JOHN, Chaldean's Stud Farm, St. Fagans, near Cardiff, chestnut, **Phoebe Watton**, aged.

III. (£2.)—W. J. TATEM, Pen-y-lan, Cardiff, black mare, **Princess**, foaled 1894; s., Recruit; d., Black Bess.

R. & H. C.—Mrs. R. T. THORNTON, Middleton Hall, Brentwood, bay, **Middleton Bon Bon**, foaled 1896, bred by G. Lonsdale, Anlaby, Hull; s., Chocolate Junior; s. of d., North Star.

H. C.—**E. BAXTER**, bay mare, **Musk** (8323), foaled 1893, bred by E. Farnaby, Lockington, Beverley, Yorks; s., Caxton (2398); d., Matron (1697); s. of d., Lord Derby II. (417):—**Mrs. R. T. THORNTON**, bay mare, **Hutton Mimosa**, foaled 1895; s., Vigorous; d., Gondola; s. of d., Confidence:—and **J. FORD**, Newton Ferrers, Plymouth, bay, **Court Champion**, foaled May, 1896.

CLASS 28.—*Pair of Carriage Horses (Mares or Geldings) under 15 hands. Driven in double harness on the third day of Show.*
[4 entries.]

I. (£10.)—**E. BAXTER**, Hutton Stud, Brentwood, bay mare, **Musk** (8323), foaled 1893, bred by E. Farnaby, Lockington, Beverley, Yorks; s., Caxton (2398); d., Matron (1697); s. of d., Lord Derby II. (417); and his bay, **Miss Howard** (12,134), foaled 1893, bred by W. Rook, Bielby, Everingham, Yorks; s., Sensation VI. (3265); d., Bielby Princess (5034); s. of d., King Charley (392).

II. (£5.)—**W. J. TATEM**, Pen-y-lan, Cardiff, black mare, **Princess**, foaled 1894; s., Recruit; d., Black Bess; and his black, **Surprise**.

R.—**Mrs. R. T. THORNTON**, Middleton Hall, Brentwood, bay mare, **Hutton Mimosa**, foaled 1895; s., Vigorous; d., Gondola; s. of d., Confidence; and her bay, **Middleton Bon Bon**, foaled 1896, bred by G. Lonsdale, Anlaby, Hull; s., Chocolate Junior; s. of d., North Star.

CLASS 29.—*Best Tradesman's turn out (with one horse and two wheels), used solely and constantly for trade purposes, and to have been in Exhibitor's possession for at least two months prior to date of Show. Open only to Residents within a radius of five miles of the Town Hall, Plymouth. Exhibited on the fourth day of Show.*
[5 entries.]

I. (£5.)—**LETHBRIDGE AND SONS**, Tracy Yard, Plymouth.

II. (£3.)—**R. CUNDY AND SONS**, The Royal Dairy, Devonport, bright bay, **Peggy**.

III. (£2.)—**A. LETEBRIDGE**, Summerland Yard, Plymouth.

R.—**A. J. WATTS**, 132, Alexandra Road, Ford, Devonport, brown, **Primrose**, foaled 1892, bred by Mr. Luscombe, Stanicombe Farm, Totnes; s., Chester.

C.—**G. W. HORSWELL**, North Hill Dairy, Plymouth, roan, **Prince**.

CLASS 30.—*Best Tradesman's turn-out (with one or two horses and four wheels), used solely and constantly for trade purposes, and to have been in the Exhibitor's possession for at least two months prior to the date of Show. Open only to Residents within a radius of five miles of the Town Hall, Plymouth. Exhibited on the fourth day of Show.* [5 entries.]

I. (£5.)—**W. BISCOMBE AND SONS**, Green Street, Plymouth.

II. (£3.)—**A. LETEBRIDGE**, Summerland Yard, Plymouth.

III. (£2.)—**W. BISCOMBE AND SONS**.

R.—**W. WENMOUTH**, 12, Stoke Terrace, Stoke, Devonport, grey, **Dimple**.

CLASS 31.—Tandems (Mares or Geldings). Driven in harness on the fifth day of Show. [6 entries.]

I. (£10.)—W. J. TATEM, Pen-y-lan, Cardiff, black gelding, **Astonishment**, and his black, **Surprise**.

II. (£5.)—MRS. R. T. THORNTON, Middleton Hall, Brentwood, bay mare, **Hutton Mimosa**, foaled 1895; s., Vigorous; d., Gondola; s. of d., Confidence; and her bay, **Middleton Bon Bon**, foaled 1896, bred by G. Lonsdale, Anlaby, Hull; s., Chocolate Junior; s. of d., North Star.

III. (£2.)—W. MORTIMORE, St. Thomas, Exeter, chestnut mare, **Miss Cadet** (7136), foaled 1892, bred by M. Wilson, 12, Fenchurch Avenue, London; s., Cadet (1251); d., Happy Thought (673); s. of d., Model 2nd (460); and his grey gelding, **Gay Horace**, foaled 1897; s. of d., Sir Horace.

R.—E. BAXTER, Hutton Stud, Brentwood, Essex, black, **Midnight Echo**, foaled 1898, bred by M. Cruise, Belwell House, Sheffield; s., Comrade II. (3508); and his brown, **Amaze** (7332), foaled 1898, bred by J. Grise-wood, Holme, York; s., Pomfret Performer (5749); d., Duchess (6595); s. of d., Holme Beaconsfield (2516).

CLASS 32.—Trotting. Best Mare or Gelding for speed and action. Driven in harness on the fifth day of Show. [3 entries.]

I. (£5.)—MRS. R. T. THORNTON, Middleton Hall, Brentwood, Essex, bay gelding, **Duke of Cranbrook**, foaled 1898, bred by the late E. Edmondson, Knowle, Warwick; s., Garton, Duke of Connaught; d., Lady Cranbrook; s. of d., All Fours.

II. (£3.)—J. JORDAN, 162, Union Street, Plymouth, bay, **Dolly Grey**.

R. & H. C.—J. Ford, Newton Ferrers, Plymouth, bay, **Court Champion**, foaled May, 1896.

JUMPING.**CLASS 33.—Mare or Gelding, not over 15-2 hands, that shall jump in the best form on the second day of Show. [10 entries.]**

I. (£10.)—J. ROWE, New Bridge, Penzance, brown mare, **Lady Penzance**; s., Douglas; d., Barmaid.

II. (£5.)—J. FORD, Newton Ferrers, Plymouth, bay mare, **Easter Morn**, foaled May, 1897, bred by J. Woon, Bugle, St. Austell; s., Colemaird; d., Progress.

III. (£2.)—J. H. GLOVER, Cornwood Inn, Cornwood, Devon, bay mare, **Blink Bonny**, 8 y.; s., Young Ethus.

R.—RANDALL AND FERRIS, Livery Stables, Penryn, Cornwall, grey, **Lady Penryn**.

CLASS 34.—Mare or Gelding, over 15-2 hands, that shall jump in the best form on the second day of Show. [7 entries.]

I. (£15) equal.—J. WHEELER, Shakespeare Farm, Studley, **Confidence**, and his **Dragon**.

III. (£2.)—MRS. M. E. DANIELL, Church Farm, Atworth, Melksham, roan gelding, **Newcastle**.

R.—F. W. HENDERSON, Sherwood, Newton St. Cyres, Exeter, bay gelding, **Dick**, 5 y.

CLASS 35.—*Mare or Gelding, not over 15 hands, that shall jump in the best form on the third day of Show.* [10 entries.]

I. (£10.)—J. WHEELER, Shakespeare Farm, Studley, **Laddie**.

II. (£5.)—A. W. BEER, High Chaddlewood, Plympton, South Devon, black gelding, **Black Jack**; s., The Squire.

III. (£2.)—T. ROBERTS, Ennis, St. Erme, Truro, black mare, **Swift**, foaled April 28, 1897; s., Seaport; d., Marksman; s. of d., Oxford.

R.—S. WOOD, Bampton, Devon, grey gelding, **Silver Button**.

CLASS 36.—*Mare or Gelding, over 15 hands, that shall jump in the best form on the third day of Show.* [10 entries.]

I. (£10.)—MRS. M. E. DANIELL, Church Farm, Atworth, Melksham, roan gelding, **Newcastle**.

II. (£5.)—J. WHEELER, Shakespeare Farm, Studley, **Dragon**.

III. (£2.)—J. WHEELER, **Confidence**.

R.—J. ROWE, New Bridge, Penzance, brown mare, **Lady Penzance**; s., Douglas; d., Barmaid.

CLASS 37.—*Mare or Gelding, not over 14-2 hands, that shall jump in the best form on the fourth day of Show.* [9 entries.]

I. (£10.)—J. CHYNOWETH, junr., Walhalla, St. Colomb, Cornwall, dark bay, **Wild Boy**, 8 y.; s., Young Barnumite; d., Nell.

II. (£5.)—J. WHEELER, Shakespeare Farm, Studley, **Laddie**.

III. (£2.)—S. WOOD, Bampton, Devon, grey gelding, **Silver Button**.

R.—J. G. JAMES, Barteliver, Grampound Road, Cornwall, chestnut, **Lady Lawless**, aged.

CLASS 38.—*Mare or Gelding, over 14-2 hands, that shall jump in the best form on the fourth day of Show.* [11 entries.]

I. (£10.)—W. HAWKINS, Hookways Farm, Bampton, Devon, bay gelding.

II. (£5.)—J. WHEELER, Shakespeare Farm, Studley.

III. (£2.)—J. FORD, Newton Ferrers, Plymouth, bay mare, **Easter Morn**, foaled May, 1897, bred by J. WOOD, Bugle, St. Austell; s., Colemaird; d., Progress.

R.—J. OLVER, Moor Cottage, Grampound Road, Cornwall, bay mare, **The Barmaid**; s., The General; d., Jessie; s. of d., Billie Barlow.

CLASS 39.—*Mare or Gelding, not over 14 hands, that shall jump in the best form on the fifth day of Show.* [3 entries.]

I. (£10.)—J. BUCKNELL, Shapcott, Knowstone, South Moulton, bay filly, **Arabella**, foaled 1895; s., Lester.

II. (£5.)—W. J. CROSSING, Woodford, Plympton, bay mare, **Maggie**, foaled 1897, bred by — Wyatt, Ivybridge; s., Flaxby.

R.—E. SNELL, Mount Hawke, Scorrier, chestnut gelding, **Little Dozey**, 9 y.; s., Beechwood.

CLASS 40.—*Mare or Gelding, over 14 hands, that shall jump in the best form on the fifth day of Show.* [12 entries.]

I. (£10.)—J. WHEELER, Shakespeare Farm, Studley.

II. (£5.)—Mrs. M. E. DANIELL, Church Farm, Atworth, Melksham, roan gelding, **Newcastle**.

III. (£2.)—J. OLVER, Moor Cottage, Grampound Road, Cornwall, bay mare, **The Barmaid**; s., The General; d., Jessie; s. of d., Billie Barlow.

R.—A. W. BEER, High Chaddlewood, Plympton, South Devon, black gelding, **Black Jack**; s., The Squire.

CATTLE.

(£100 towards the Prizes in the South Devon Cattle and South Devon, Dartmoor and Exmoor Sheep Classes, was contributed by the Devon County Agricultural Association.)

DEVON.

CLASS 41.—*Devon Bull, calved in 1898 or 1899.* [5 entries.]

I. (£10) and **R. for Champion.***—J. C. WILLIAMS, Caerhays, St. Austell, **Woodman** (4518), born May 19, 1899; s., Woodcock (3831); d., Lady Queen 2nd (14,291); s. of d., Marmion (2642).

II. (£5.)—J. F. R. MORRIS, Marwood, Barnstaple, Devon, **Union Jack** (4682), born April 27th, 1899; s., Pretty Middling 2nd (3172); d., Fancy 22nd (12,940); s. of d., Lord Wolseley (2063).

R.—Hon. E. W. B. PORTMAN, Hestercombe, Taunton, **Hestercombe General**, born March 8th, 1899; s., Master Harold of Pound (3932); d., Myrtle 56th of Pound (15,402); s. of d., Masterpiece (2837).

CLASS 42.—*Devon Bull, calved in 1900.* [5 entries.]

I. (£12) and **Champion (£10 10s.).***—J. C. WILLIAMS, Caerhays, St. Austell, **Musa**, born January 27, 1900; s., Pretty Middling (2859); d., Mirabel 3rd (15,510); s. of d., Afterthought (3375).

II. (£5.)—J. C. WILLIAMS, Foxglove, born February 13, 1900; s., Afterthought (3375); d., Fitful 2nd (14,286); s. of d., Cardsharper (3082).

R.—Hon. J. R. de C. BOSCAWEN, Tregye, Perranwell, Cornwall, **Crabapple**, born May 28, 1900; s., Orchard; d., Nymphæ; s. of d., Drover (2953).

* Champion Prize, given by A. O. Sillifant, Esq., for Best Animal in Classes 41 to 47.

CLASS 43.—Devon Bull, calved in 1901. [6 entries.]

I. (£12.)—J. C. WILLIAMS, Caerhays, St. Austell, **Woodbine**, born February 6th, 1901; s., Woodcock (3831); d., Lady Queen 2nd (14,291); s. of d., Marmion (2642).

II. (£5.)—J. C. WILLIAMS, **Kemble**, born March 4th, 1901; s., Afterthought (3375); d., Miss Farren (18,040); s. of d., Captain (2204).

III. (£2.)—Hon. J. R. de C. BOSCAWEN, Tregye, Perranwell, Cornwall, **Pip**, born April 23, 1901; s., Orchard; d., Nymphæ; s. of d., Drover (2953).

R.—T. S. MORGAN, Whimble, Devon, **Pound Mormon**, born April 2, 1901, bred by A. C. Skinner, Bishop's Lydeard, Somerset; s., Merryman (4082); d., Moss Rose 30th of Pound (16,523); s. of d., Duke of Pound 27th (3572).

CLASS 44.—Devon Cow, in-Milk, calved before 1899. [4 entries.]

I. (£12.)—W. R. and A. TRIBLE, Halsdon Barton, Cookbury, and Kingsford, Thornbury, and Brandiscorner, North Devon, **Fern of Halsdon** (15,477), born March 1, 1896; s., Lord Blagdon (2999); s. of d., Duke of Halsdon (2961).

II. (£5.)—E. C. NORRISH, Gays, Copplestone, **Gay Honesty** (18,364), born December 25, 1898, bred by R. Famlyn, Stoke Rivers, Barnstaple; s., Lord Kerscott (3913); d., Dasher 3rd; s. of d., Good News (3123).

R.—Hon. E. W. B. PORTMAN, Hestercombe, Taunton, **Lowton**, born January 2, 1897, bred by E. A. Buncombe, Longforth, Wellington; s., Wellington Boy (3965); s. of d., Myrtle Jubilee Boy (2294).

CLASS 45.—Devon Heifer, in-Milk, calved in 1899. [2 entries.]

I. (£10.)—Hon. C. B. PORTMAN, Child-Okeford, Blandford, Dorset, **Capton Belle** (3397), born January 20, 1899, bred by A. C. Bowerman, Capton, Williton, Taunton; s., Lord Culverhay (3469); d., Honesty (14,971); s. of d., Pretty Middling 3rd (3173).

R.—Hon. E. W. B. PORTMAN, Hestercombe, Taunton, **Bradfield Moss Rose 3rd** (17,248), born December 10, 1899, bred by Sir W. H. Walrond, Bradfield, Devon; s., General Mercier (4206); d., Moss Rose 22nd of Pound (13,608); s. of d., Masterpiece (2837).

CLASS 46.—Devon Heifer, calved in 1900. [4 entries.]

I. (£10.)—T. S. MORGAN, Whimble, Devon, **Quantock Lady Currypool No. 15**, born February 12, 1900, bred by E. J. Stanley, Quantock, Somerset; s., Tregothnam (2902); d., Quantock Lady-Currypool; s. of d., Baronet (1897).

II. (£5.)—R. W. C. EVERED, Cridlands, Spaxton, Bridgwater, **Princess 4th**, born June 18, 1900; s., Quantock Bridegroom (4097); d., Quantock Princess 2nd (14,810); s. of d., Duke of Bridgwater (3258).

R.—Hon. E. W. B. PORTMAN, Hestercombe, Taunton, **Hestercombe Daisy**, born March 2, 1900; s., Duke of Hestercombe (4020); d., Lowton (15,578); s. of d., Wellington Boy (3965).

CLASS 47.—Devon Heifer, calved in 1901. [6 entries.]

I. (£10.)—Hon. E. W. B. PORTMAN, Hestercombe, Taunton, **Hestercombe Myrtle**, born February 20, 1901; s., Hestercombe Ruby (4045); d., Myrtle 56th of Pound (15,042); s. of d., Masterpiece (2837).

II. (£5.)—J. F. R. MORRIS, Marwood, Barnstaple, Devon, **Fancy 27th** (18,348), born March 19, 1901; s., Union Jack (4682); d., Fancy 24th (13,493); s. of d., Country Gentleman (2741).

III. (£2.)—W. H. BOND, Tyneham, Wareham, Dorset, **Treasure** (18,107), born February 11, 1901; s., Grandee (4036); d., Tutty (16,683); s. of d., Johnny Come Quick (3458).

R.—BOVINE, LIMITED, 44–47, Bishopsgate Street, Without, London, E.C., **Bovine Princess 2nd**, born January 7, bred by A. C. Skinner, Pound, Bishop's Lydeard, Taunton; s., Merryman (4082); d., Ruby 3rd of Pound (13,614); s. of d., Masterpiece (2857).

SOUTH DEVON.**CLASS 48.—South Devon Bull, calved in 1898 or 1899. [8 entries.]**

I. (£10) and Champion.*—W. MERRY, Great Woodford, Plympton St. Mary, **Cromer** (969), born January 4, 1898, bred by J. D. Ellis, Dunston, Yealmpton; s., Lo-Ben (625); d., Beauty 3rd (2497); s. of d., Grand Dam Beauty (193).

II. (£5.)—T. B. BOLITHO, Trewidden, Penzance, **Nonpareil** (1193), born April 1, 1899; s., Norman (422); d., Peeress (2195).

III. (£2.)—J. WAKEHAM, Marley Home Farm, Buckfastleigh, **Good Gift** (1149), born February 27, 1899, bred by J. Luscombe, Coarswell, Ugborough, Ivybridge; s., New Year's Gift; d., Beauty 2nd (416); s. of d., Duke of Devon (35).

R.—R. E. PAIGE, J.P., Treboul, St. Germans, Cornwall, **Buller** (1103), born October 25, 1899, bred by Mrs. Horton, Start, Stokenham, Devon; s., Best Man (556); d., Sally 5th (2550).

C.—T. S. WALTERS, Coleridge, Chillington, Kingsbridge, **Langston Lad** (1006), born February 1, 1898, bred by H. Helmer, Wonwell Court, Kingston Kingsbridge; s., Right Sort (799); d., Cherry 2nd (1151); s. of d., Raglan (110).

CLASS 49.—South Devon Bull, calved in 1900. [6 entries.]

I. (£12.)—T. R. BOLITHO, Trengwainton, Hea Moor, R.S.O., Cornwall, **Silver Prince**, born January, 1900; s., Silver King (812); d., Queen Bee (2849).

II. (£5.)—W. MERRY, Great Woodford, Plympton St. Mary, **Cromer** (1276), born March 17, 1900; s., Cromer (967); d., Myrtle (1730); s. of d., Grandam Tulip.

* Given by the Town of Devonport—"The Devonport Challenge Cup" (value £52 10s.) for the Best Bullock (Bull, Cow or Heifer) in the South Devon Classes. The Cup to be won two years in succession or three years at intervals before becoming the absolute property of the winner. The winner of the Cup this year also received a Special Prize given by Lord St. Levan, value £20.

III (£2).—**EARL OF MOUNT EDGCUMBE**, Mount Edgcumbe, Plymouth, **Langford 1st** (1326) (see S.D.H.B., vol. vii. p. 84), bred by E. Cornish, Charleton, Kingsbridge; s., Merry Boy (1022); d., Cerise and Blue (3129).

R.—**H. B. MILDMAI**, Flete, Ivybridge, Devon, **The King** (1383, S.D.H.B.), born October 4, 1900, bred by J. Walling, Chokeford, Plympton, Devon; s., Cromer (969, S.D.H.B.); d., The Belle (2391, S.D.H.B.).

CLASS 50.—South Devon Bull, calved in 1901. [11 entries.]

I (£12).—**B. BUTLAND**, Leigham, Plympton, **Famous**, born February 25, 1901; s., Saltram (S.D.H.B., 1220); d., Dairymaid (S.D.H.B., 3694); s. of d., Disraeli (S.D.H.B., 281).

II (£5).—**J. S. WROTH**, Coombe, Aveton Gifford, S. Devon, **The Czar**, born June 10, 1901; s., Old Fashion (653); d., Lorna Doone (3337); s. of d., Doncaster (27).

III (£2).—**E. and J. STOOKE**, Stokenham, Kingsbridge, Devon, **Duke** (1433), born March 23, 1901, bred by W. Bradridge, Coryton Barton, Lewdown; s., Masher (769); d., Crocus (2941).

R.—**T. S. WALTERS**, Coleridge, Chillington, Kingsbridge, **Coleridge Lad**, born April, 1901; s., Langston Lad (1006); d., Ruby (2715); s. of d., Sir Robert (434).

CLASS 51.—South Devon Cow, in-Milk, calved before 1899. [7 entries.]

I (£12).—**J. LUSCOMBE**, Courswell, Ugborough, Ivybridge, **Beauty 3rd** (2572), born December 12, 1895; s., Doncaster (27); d., Beauty 2nd (416); s. of d., Duke of Devon (35).

II (£5).—**F. T. GLOYN AND SONS**, Pennycross Barton, Plymouth, **Crocus** (3554), born June 3, 1898, bred by J. S. Ford, Hall Tors, Yealampton; s., Norman (422); d., Beauty (2503).

III (£2).—**W. MERRY**, Great Woodford, Plympton, St. Mary, **Lovely** (3508), born April 10, 1898; s., President (656); d., Lovely (2040); s. of d., Grandam Lovely (449).

R.—**F. T. GLOYN AND SONS**, **Gentle** (3555), born February 2, 1898, bred by W. H. B. Ash, Manor Farm, Ringmore; s., Masterpiece (412); d., Ruby (1470).

CLASS 52.—South Devon Heifer, in-Milk, calved in 1899—First Prize, £10—second, £5—third, £2. [No ENTRY.]

CLASS 53.—South Devon Heifer, calved in 1900. [10 entries.]

I (£10).—**H. BRADBRIDGE**, Pridhamsleigh, Ashburton, **Dolly 3rd**, born February 25, 1900; s., Masher (769); d., Dolly 2nd (5575); s. of d., Dolly (2011).

II (£5).—**E. LUSCOMBE**, South Langston, Aveton Gifford, **Queenie 2nd** (4165), born November 20; s., General Buller (1138); d., Queenie (3199); s. of d., Major 2nd (629).

III (£2).—**B. BUTLAND**, Leigham, Plympton, **Rosebud** (4041, S.D.H.B.), born October 9, 1900; s., Rufus (808, S.D.H.B.); d., Beauty 3rd (3084, S.D.H.B.); s. of d., Rainbow 2nd (520, S.D.H.B.).

R.—B. BUTLAND, **Dairymaid 2nd** (4037, S.D.H.B.), born February 10, 1900; s., Rufus (808, S.D.H.B.); d., Dairymaid (3694, S.D.H.B.); s. of d., Disraeli (281, S.D.H.B.).

CLASS 54.—*South Devon Heifer, calved in 1901.* [10 entries.]

I. (£10).—B. BUTLAND, Leigham, Plympton, **Beauty 4th**, born January 14, 1901; s., Prince Edward (517, S.D.H.B.); d., Beauty 2nd (3083, S.D.H.B.); s. of d., Rainbow 2nd (520, S.D.H.B.).

II. (£5).—J. G. D. MOORE, Trewithen, Grampond Road, Cornwall, **Lady Jane**, born April 17, 1901; s., Baron; d., Lady Kate (4210); s. of d., Archie (440).

III. (£2).—B. BUTLAND, **Princess 1st**, born January 9, 1901; s., Prince Edward (517, S.D.H.B.); d., Princess (3378, S.D.H.B.); s. of d., Rufus (808, S.D.H.B.).

R.—B. H. HANNAFORD, Rowdon, Revelstoke, Newton Ferrers, **May Flower**, born March 5, 1901; s., Happy Jack (743, vol. v., S.D.H.B.); d., May 3rd (3459, S.D.H.B.).

SHORTHORN.

CLASS 55.—*Shorthorn Bull, calved in 1898 or 1899.* [6 entries.]

I. (£10).—J. D. WILLIS, Bapton Manor, Codford, roan, **Granite Chip**, born August 31, 1898, bred by W. Parkin-Moore, Whitehall, Carlisle; s., Granite City; d., Cowslip (21); s. of d., Duke of Albemarle.

II. (£5).—J. LITTLE AND SONS, Paxcroft Farm, Trowbridge, red, **Vain Lord** (75,806), born July 29, 1898, bred by T. R. Hulbert, Worcestershire; s., Vain Captain (69,742); d., Cranberry; s. of d., Fitz Rose (57,323).

III. (£2).—J. COAD, Treleaze, St. Keverne, R.S.O., Cornwall, roan, **Rufus**, born May 5, 1898; s., Rosy Morn (73,463); d., Ruth 253rd; s. of d., Prince Kirklevington 4th.

R.—LORD TREDEGAR, Tredegar Park, near Newport, Mon., white, **Prince Alto** (77,467), born February 3, 1899; s., Alto (68,147); d., Rose of Tredegar; s. of d., Comet 4th (62,313).

CLASS 56.—*Shorthorn Bull, calved in 1900.* [7 entries.]

I. (£12) and Champion (£10).*—J. D. WILLIS, Bapton Manor, Codford, white, **C.I.V.**, born July 6, 1900; s., Brave Archer; d., Carnation; s. of d., Count Lavender.

II. (£5) and R. for Champion.*—G. F. KING, Chewton Keynsham, Bristol, roan, **Lord Bruce** (79,237), born April 17, 1900; s., Chewton Oxford Cornelius (74,223); d., Evely; s. of d., Beau Ideal (63,685).

III. (£2).—L. DE ROTHSCHILD, Ascott Home Farm, Leighton Buzzard, roan, **Sliver Mist**, born January 2, 1900, bred by W. Duthie, Collynie; s., Silver Plate (75,633); d., Mistletoe 14th; s. of d., Scottish Archer.

R.—T. F. ROKKRUGE, Trenethick, Helston, Cornwall, roan, **Lord Norman**, born April 6, 1900; s., Norman (73,140); d., Lovelock; s. of d., Aaron Bridekirk 15th (63,639).

* Given by the Shorthorn Society for Best Bull in Class 55, 56 or 57 entered in or eligible for Coates's Herd Book.

V. H. C.—**LORD TREDEGAR**, Tredegar Park, near Newport, Monmouth, roan, **Jester** (79,120), born February 25, 1900, bred by the late R. Garne, Aldsworth, Gloucestershire; s., **Pluto** (73,219); d., **Rosedale Jewel**; s. of d., **Martinet** (59,455).

CLASS 57.—Shorthorn Bull, calved in 1901. [8 entries.]

I. (£12).—**J. D. WILLIS**, Bapton Manor, Codford, Wilts, roan, **Bapton Florist**, born February 14, 1901; s., **Silver Plate**; d., **Moon Daisy**; s. of d., **Captain of the Guard**.

II. (£5).—**A. HENDERSON, M.P.**, Buscot Park, Faringdon, Berks, roan, **Baron Buscot**, born June 12, 1901; s., **Wanderer's Prince** (78,105); d., **Quicksilver 81st** (vol. xlviii.); s. of d., **Royal Nottingham** (59,834).

III. (£2).—**LORD CALTHORPE**, Elvetham Park, Winchfield, Hants, roan, **Elvetham Victor**, born January 21, 1901; s., **Prince Victor** (73,320); d., **Rosina**; s. of d., **Bapton Lavender** (71,972).

R.—**A. F. BASSETT**, Tehidy, Camborne, Cornwall, roan, **Royal Duke**, born February 11, 1901; s., **Royal Sovereign**; d., **Wild Duchess 17th**; s. of d., **Treforrest**.

CLASS 58.—Shorthorn Cow, in-Milk, calved before 1899. [6 entries.]

I. (£12).—**J. D. WILLIS**, Bapton Manor, Codford, Wilts, white, **White Heather**, born February 1, 1898, bred by J. B. Manson, Kilblean, N.B.; s., **Merrymason**; d., **Beauty 24th**; s. of d., **Morton**.

II. (£5).—**LORD CALTHORPE**, Elvetham Park, Winchfield, Hants, roan, **Warrior Queen**, born June 13, 1897, bred by Capt. W. H. O. Duncombe, Waresley Park, Hunts; s., **Liberator** (64,260); d., **Amazon**; s. of d., **Commander** (54,116).

III. (£2).—**A. HENDERSON, M.P.**, Buscot Park, Faringdon, Berks, roan, **Ringdale Favourite 2nd**, born February 11, 1898, bred by J. Thorley, Ringdale, Faringdon; s., **Viator** (71,769); d., **Favourite 7th**; s. of d., **Hiindlip 34th** (54,441).

R.—**A. HISCOCK, jun.**, Manor Farm, Motcombe, Dorset, roan, **Patient Happy** (vol. xlv. p. 506), born July 20, 1895; s., **Sebastopol** (64,808); d., **Patience**; s. of d., **George** (51,328).

H. C.—**A. HENDERSON, M.P.**, red, **Grace Darling** (vol. xlv.), born June 4, 1897, bred by J. Harrison, Moss House, Hoole, Preston; s., **Scotch Goods** (69,547); d., **Moss Rose**; s. of d., **Duke of Clarence** (58,767).

CLASS 59.—Pure Bred Pedigree Shorthorn Dairy Cow, in-Milk, of any age, eligible for and entered in Coates's Herd Book (or pedigree sent for such entry before the Show), that had not previously won a First Prize offered by the Shorthorn Society in a corresponding Class. [10 entries.]

(The First Prize in Class 59 was given by the Shorthorn Society.)

I. (£10).—**LORD ROTHSCHILD**, Tring Park, Tring, Herts, red, **Sunshade 2nd**, born October 7, 1895, bred by S. W. Bennett, Wareham, Dorset; s., **Invaluable** (65,687); d., **Sunshade**; s. of d., **Bright Banner** (53,553).

II. (£5).—**W. J. HOSKEN**, Loggan's Mill, Hayle, Cornwall, red, **Wild Duchess 20th**, born October 4, 1899; s., **Monocrat** (67,505); d., **Wild Duchess 11th**; s. of d., **Duke of Wellington** (63,923).

R.—A. HENDERSON, M.P., Buscot Park, Faringdon, Berks, roan, **Ringdale Favourite 2nd**, born February 11, 1898, bred by J. Thorley, Ringdale, Faringdon; s., Viator (71,769); d., Favourite 7th; s. of d., Hindlip 34th (54,441).

H. C.—G. F. KING, Chewton Keynsham, Bristol, roan, **Countess 56th**, born April 2, 1899; s., Viceroy (73,814); d., Countess 26th; s. of d., Blair Athol (60,367).

CLASS 60.—Shorthorn Heifer, in-Milk, calved in 1899. [6 entries.]

I. (£10).—W. J. HOSKEN, Loggan's Mill, Hayle, Cornwall, red, **Wild Duchess 20th**, born October 4, 1899; s., Monocrat (67,505); d., Wild Duchess 11th; s. of d., Duke of Wellington (63,923).

II. (£5).—J. COLMAN, Gatton Park, Reigate, Surrey, roan, **Hawthorn Gem III.**, born January 7, 1899, bred by W. Atkinson, Overthwait, Milnthorpe; s., Cairo (72,151); d., Hawthorn Gem II.; s. of d., Baron Bloom (66,656).

III. (£2).—A. HENDERSON, M.P., Buscot Park, Faringdon, red, **Moss Rose 2nd**, born March 2, 1899, bred by J. Harrison, Moss House, Hoole, Preston; s., Cashier (63,326); d., Moss Rose (vol. xliii.); s. of d., Duke Clarence (58,767).

R.—G. F. KING, Chewton Keynsham, Bristol, roan, **Countess 56th**, born April 2, 1899; s., Viceroy (73,814); d., Countess 26th; s. of d., Blair Athol (60,367).

H. C.—A. F. BASSETT, Tehidy, Camborne, roan, **Carnation 26th**, born April 5, 1899, bred by W. J. Hosken, Loggan's Mills, Hayle; s., Treforrest; d., Carnation 17th; s. of d., Duke of Tregunter 10th.

CLASS 61.—Shorthorn Heifer, calved in 1900. [8 entries.]

I. (£10).—R. STBATTON, The Duffryn, Newport, Mon., roan., **Calico Belle**, born February 8, 1900; s., Alto (68,147); d., Calico; s. of d., Bapton Star (62,107).

II. (£5).—J. D. WILLIS, Bapton Manor, Codford, Wilts, roan, **Bapton Jewel**, born January 16, 1900; s., Royal Jeweller; d., Jessamine; s. of d., Bapton Javelin.

III. (£2).—W. J. HOSKEN, Loggan's Mill, Hayle, Cornwall, roan, **Lady Blithfield 12th**, born January 5, 1900; s., Treforrest (63,452); d., Lady Blithfield 8th; s. of d., Duke of Tregunter 10th (54,224).

R.—W. NICHOLSON, Basing Park, Alton, Hants, white, **Princess 66th**, born March 17, 1900; s., Audacious (73,968); d., Princess 60th; s. of d., Aristotle (65,083).

V. H. C.—LORD CALTHORPE, Elvetham Park, Winchfield, Hants, roan, **Elvetham Harebell**, born March 17, 1900; s., Prince of Sanquhar (71,251); d., Hilda Quadroom; s. of d., Gaelic Knight (58,991).

CLASS 62.—Shorthorn Heifer, calved in 1901. [8 entries.]

I. (£10).—J. D. WILLIS, Bapton Manor, Codford, Wilts, roan, **Malmaison**, born March 8, 1901; s., Silver Plate; d., Wiltshire Daisy; s. of d., Rising Star.

II. (£5).—The EARL OF CAWDOR, Golden Grove, Carmarthen, roan,

Golden Grove Seraphina, born January 3, 1901; s., **Clan Cherito** (7225); d., **Seraphina Belle**; s. of d., **Prince** (71,193).

III. (£2).—**R. STRATTON**, The Duffryn, Newport, Mon., roan, **Daisy Chain**, born February 16, 1901; s., **Alto** (68,147); d., **Michaelmas Daisy**; s. of d., **Medallion** (56,175).

R.—**J. COLMAN**, Gatton Park, Surrey, red and white, **Corona**, born January 13, 1901, bred by the Executors of T. Stamper, Nunnington, Yorks; s., **Jewel Star** (76,919); d., **Cassandra** (H.B., vol. xlv. p. 713); s. of d., **Duke of Waterloo** (58,835).

HEREFORD.

CLASS 63.—Hereford Bull, calved in 1898 or 1899. [5 entries.]

I. (£10).—**W. T. BARNEBY**, Saltmarshe Castle, Bromyard, **Gambler**, born January 23, 1899; s., **Happy Hampton** (16,097); d., **Gamester Lady** (vol. xxxi. p. 211); s. of d., **Horace Bonnor** (13,138).

II. (£5).—**EARL OF COVENTRY**, Croome Court, Worcester, **Vishnu** (21,100), born March 7, 1899; s., **Viscount** (18,648); d., **Vivandiere**; s. of d., **Senator** (14,896).

R.—**W. H. B. CAVE**, Wall End, Monkland, Leominster, Hereford, **Victor** (20,387), born March 4, 1898, bred by **A. P. Turner**, The Leen, Pembridge; s., **Clarence** (15,944); d., **Pansey 2nd** (vol. xxix. p. 619); s. of d., **Statesman** (14,938).

H. C.—**TUDGE** and **FENN**, Duxmoor, Craven Arms, Salop, **Royal Rupert**, born April 22, 1899, bred by **J. Tudge**; s., **Viscount Rupert** (19,789); d., **Rutheen** (vol. xxiv. p. 671); s. of d., **Reginald** (14,089).

CLASS 64.—Hereford Bull, calved in 1900. [9 entries.]

I. (£12).—**A. P. TURNER**, The Leen, Pembridge, Herefordshire, **Magnate** (21,571), born January 17, 1900; s., **Clarence** (15,944); d., **Margery 3rd**; s. of d., **Statesman** (14,938).

II. (£5).—**G. D. FABER**, M.P., Rush Court, Wallingford, Berks, **Lord Roberts**, born January 9, 1900, bred by **J. Price**, The Court House, Pembridge, Herefordshire; s., **Balfour** (18,688); d., **Lottie**; s. of d., **Pioneer** (14,025).

III. (£2).—**W. T. BARNEBY**, Saltmarshe Castle, Bromyard, **Obelisk**, born February 4, 1900; s., **Happy Hampton** (16,097); d., **Fair Spark** (vol. xxix. p. 197); s. of d., **Iroquois** (7039).

R.—**EARL OF COVENTRY**, Croome Court, Worcester, **Methodist** (21,597), born January 14, 1900; s., **Gaudy Prince** (19,425); d., **Metal**; s. of d., **Viscount** (18,648).

H. C.—**J. EDWARDS**, Rhiwlas, Titley, Herefordshire, **Evolution**, born March 2, 1900; s., **Liberty** (19,521); d., **Sunbeam**; s. of d., **Rupert 2nd** (17,509).

CLASS 65.—Hereford Bull, calved in 1901. [8 entries.]

I. (£12).—**A. E. HUGHES**, Wintercott, Leominster, **Glendower 2nd**, born January 18, 1901; s., **Glendower** (20,012); d., **Myrtle**; s. of d., **Albion** (15,027).

II. (£5).—P. COATS, Sheepcote, Clifford, Herefordshire, **Holmer**, born January 5, 1901; s., Plunder (20,260); d., Howena 7th (vol. xxviii. p. 238); s. of d., Lackey (16,795).

III. (£2).—R. GREEN, The Whittern, Kington, Hereford, **Matterhorn**, born January 12, 1901; s., Privateer (20,263); d., Marjory; s. of d., Sterling (14,943).

R.—J. TUDGE, Duxmoor, Craven Arms, Salop, **Lionel**, born January 4, 1901, bred by J. Price, Pembridge, Herefordshire; s., Lalfour (18,688); d., Lively (vol. xxix. p. 512); s. of d., Beniface (9600).

H. C.—EARL OF COVENTRY, Croome Court, Worcester, **Huntsman**, born February 14, 1901; s., Home Office (20,073); d., Belinda; s. of d., Viscount (18,648).

CLASS 66.—Hereford Cow, in-Milk, calved before 1899. [2 entries.]

I. (£12).—J. TUDGE, Duxmoor, Craven Arms, Salop, **Bracelet**, born January 16, 1898; s., Gold Box (15,339); d., Coral Gem (vol. xx. p. 715); s. of d., Reginald (10,489).

R.—W. T. BARNEBY, Saltmarshe Castle, Bromyard, **Ringtail**, born April 19, 1893, bred by the late W. Barneby, Saltmarshe Castle, Bromyard; s., Panker (14,816); d., Ringdove (vol. xxiv. p. 178); s. of d., Cornlift (5270).

CLASS 67.—Hereford Heifer, in-Milk, calved in 1899. [2 entries.]

I. (£10).—G. D. FABER, M.P., Rush Court, Wallingford, Berks, **Saucebox 5th**, born January 18, 1899, bred by W. Tudge, Leinthall, Salop; s., Leinthall Hero (18,914); d., Saucebox 4th; s. of d., Ancient Briton (15,031).

R.—J. TUDGE, Duxmoor, Craven Arms, Salop, **Princess Royal**, born May 3rd, 1899; s., Viscount Wilton (19,789); d., Golden Pippin (vol. xxiii. p. 680); s. of d., Alton (11,877).

CLASS 68.—Hereford Heifer, calved in 1900. [5 entries.]

I. (£10).—J. TUDGE, Duxmoor, Craven Arms, Salop, **Royal Gem**, born January 7, 1900; s., Francis (13,800); d., Coral Gem (vol. xxii. p. 715); s. of d., Reginald (14,089).

II. (£5).—W. T. BARNEBY, Saltmarshe Castle, Bromyard, **Mistletoe**, born January 4, 1900; s., Happy Hampton (16,097); d., Mischief (vol. xxii. p. 215); s. of d., Ferdinand (17,259).

R.—A. E. HUGHES, Wintercott, Leominster, **Bartonia**, born February 3, 1900; s., Nonpareil (19,614); d., Barbara 6th; s. of d., Albion (15,027).

CLASS 69.—Hereford Heifer, calved in 1901. [10 entries.]

I. (£10).—R. GREEN, The Whittern, Kington, **Ivy Lass**, born January 21, 1901; s., Whittern Sovereign; d., Ivy; s. of d., Druid (5880).

II. (£5).—LORD LLANGATTOCK, The Hendre, Monmouth, **Hendre Bountiful**, born February 6, 1901; s., Rougenont (20,296); d., Bountiful 4th; s. of d., Albion (15,027).

III. (£2).—**FIRKINS BROTHERS**, Paunton Court, Bishop's Froome, Herefordshire, **Daisy**, born January 6, 1901; s., Lurdan (20,175); d., Posy; s. of d., Cardinal 2nd (11,980).

R.—**Sir J. COTTERELL**, Bart., Garnons, Hereford, **Rosa**, born March 24, 1901; s., Whitfield Grove (21,122); d., Rose (vol. xxvii. p. 133); s. of d., Letton Hardwick (16,806).

H. C.—**Sir J. COTTERELL**, Bart., **Julia**, born March 14, 1901; s., Whitfield Grove (21,122); d., Judith (vol. xxvii. p. 132); s. of d., Pilot (17,420).

SUSSEX.

CLASS 70.—Sussex Bull, calved in 1898 or 1899. [3 entries.]

I. (£10).—**P. F. R. SAILLARD**, Buchan Hill, Crawley, Sussex, **Bewbush Marquis** (1720), born March 14, 1899; s., Bewbush King (1575); d., Galatea 5th (6931); s. of d., What's Wanted (1329).

II. (£5).—**EARL OF DERBY**, Birtley, Witley, Surrey, **Graser** (1684), born August 22, 1899; s., Diploma (1540); d., Gladstone 3rd (4008); s. of d., Oxford 2nd (771).

R.—**E. E. BRABY**, Drungewick Manor House, Rudgewick, Sussex, **Drungewick Prebble** (1666), born December 9, 1898, bred by the late F. Warde, Alden, Addington, Kent; s., Alden II. (1451); d., Alden Prebble (6056); s. of d., Red Hill Gold Dust (927).

CLASS 71.—Sussex Bull, calved in 1900 or 1901. [3 entries.]

I. (£12).—**P. F. R. SAILLARD**, Buchan Hill, Crawley, Sussex, **Bewbush Marquis 2nd** (1787), born May 29, 1900; s., Bewbush King (1575); d., Galatea 3rd (6006); s. of d., Lord Oxeye (954).

II. (£5).—**Mrs. MONTEPIORE**, Worth Park, Crawley, Sussex, **Brant-ridge Ensign 4th** (1743), born April 25, 1900, bred by W. F. Campbell, Brantbridge Park, Balcombe, Sussex; s., Ensign (1584); d., Brantbridge Duchess 2nd (5809); s. of d., Sam (1131).

R.—**EARL OF DERBY**, Birtley, Witley, Surrey, **Grenadier** (1748), born August 2, 1900; s., Diploma (1540); d., Glowworm (6773); s. of d., Proud Prince (1249).

CLASS 72.—Sussex Cow or Heifer, in-Milk, calved in or before 1899. [2 entries.]

I. (£12).—**EARL OF DERBY**, Birtley, Witley, Surrey, **Fussy** (5848), born July 20, 1892; s., Lord Oxeye of Wantly (1070); d., Firie 6th (4910); s. of d., Young Rival (658).

R.—**P. F. R. SAILLARD**, Buchan Hill, Crawley, Sussex, **Miss Quality** (8056), born March 27, 1896, bred by E. H. Polehampton, Buxted, Sussex; s., Goldfinch (1277); d., Quality (4423); s. of d., Lord Beaconsfield 2nd (611).

CLASS 73.—Sussex Heifer, calved in 1900. [5 entries.]

I. (£10).—**EARL OF DERBY**, Birtley, Witley, Surrey, **Firie Valentine** (8195), born February 14, 1900; s., Leap Year (1483); d., Firie 6th (4910); s. of d., Young Rival (658).

II. (£5.)—Mrs. MONTEFIORE, Worth Park, Crawley, Sussex, **Dairy-maid 4th**, born February 24, 1900; s., Ensign (1584); d., Dairymaid 2nd (7426).

R.—P. F. R. SAILLARD, Buchan Hill, Crawley, Sussex, **Bewbush Ethel** (8327), born August 13, 1900; s., Leap Year (1483); d., Kitty (6645); s. of d., Silversmith 2nd (1115).

H. C.—EARL WINTERTON, Shillinglee Park, Petworth, **Stephanotis 7th**, born January 7, 1900; s., Oxford Noble 2nd; d., Stephanotis 5th.

C.—P. F. R. SAILLARD, **Hardy 29th** (8335), born January 6, 1900, bred by A. Stanford, Eaton, Steyning, Sussex; s., Bewbush Harold (1638); d., Hardy 24th (7187); s. of d., Orpheus 2nd (1448).

CLASS 74.—Sussex Heifer, calved in 1901. [3 entries.]

I. (£10.)—EARL WINTERTON, Shillinglee Park, Petworth, **Simla 2nd**, born January 24, 1901; s., Brantridge Duke; d., Simla.

II. (£5.)—EARL OF DERBY, Birtley, Witley, Surrey, **Docility** (8459), born February 7, 1901; s., Nero (1615); d., Dignity (7344); s. of d., Gamecock (1414).

R.—P. F. R. SAILLARD, Buchan Hill, Crawley, Sussex, **Bewbush Wind 3rd** (8634), born February 11, 1901; s., Bewbush King (1575); d., Wind 4th (6935); s. of d., Silversmith 2nd (1115).

RED POLLED.

(The Red Polled Cattle Society contributed £42 10s. towards the Prizes in Classes 75 to 79.)

CLASS 75.—Red Polled Bull, calved in 1898 or 1899. [3 entries.]

I. (£10.)—LORD AMHERST OF HACKNEY, Didlington Hall, Brandon, Norfolk, **Defiance** (6965), born January 1st, 1899, bred by R. H. Mason, Necton Hall, Swaffham, Norfolk; s., Magician (5021); d., Dorothy (7063); s. of d., Erebus (841).

II. (£5.)—R. P. COOPER, Ashlyns, Berkhamstead, Herts, **Felix**, born January 1st, 1899, bred by G. Taylor, Trowse, Norwich; s., Starston Croesus (5897); d., Fillpail 2nd (10,258); s. of d., Gameboy (2315).

R.—F. H. BAXENDALE, J.P., Framfield Place, Uckfield, Sussex, **Eyke Don** (7059), born March 7, 1899, bred by Alfred J. Smith, Rendlesham, Woodbridge, Suffolk; s., Russett's Delight (4641); d., Donna Barbara (10,176); s. of d., Playford Comedy (3649).

CLASS 76.—Red Polled Bull, calved in 1900 or 1901. [4 entries.]

I. (£10.)—Sir W. D. CORBET, Bart., Acton Reynald, Shrewsbury, **Albert** (7789), born May 16, 1900, bred by Hon. A. E. Fellowes, M.P., Honingham Hall, Norwich; s., The Pope (4581); d., Annie (7642); s. of d., Starston Jew (2084).

II. (£5.)—LORD AMHERST OF HACKNEY, Didlington Hall, Brandon, Norfolk, **Royal Standard** (8707), born January 26, 1900; s., Redvers (6570); d., Jubilee Emblem (12,483); s. of d., Caister Spark (3413).

R.—Sir T. V. S. GOOCH, Bart., Benacre Hall, Wrentham, Suffolk, **Pistol** (p. 3, 8558), born January 19, 1900, bred by J. Platt, Howbury Hall,

Belford; s., Champion (5370); d., Bruna (12,080); s. of d., Ruby Prince (4131).

H. C.—HON. A. E. FELLOWES, M.P., Honingham Hall, Norwich, **Antic**, born August 6, 1900; s., The Pope; d., Auburn; s. of d., Young Alfred.

CLASS 77.—Red Polled Cow or Heifer, in-Milk, calved in or before 1899. [5 entries.]

I. (£10.)—R. P. COOPER, Ashlyns, Great Berkhamstead, **Ruthless 2nd**, born September 23, 1898, bred by Mrs. A. Morrison, Fonthill, Wiltshire; s., Cock of the Walk (5380); d., Ruthless (5939); s. of d., Erebus (841).

II. (£5.)—EARL OF RADFORD, Longford Castle, Salisbury, **Necklace**, born June 20, 1896, bred by the late J. J. Colman, Carrow House, Norwich; s., Red Prince; d., Jewel 2nd; s. of d., Negro.

R.—F. H. BAXENDALE, J.P., Framfield Place, Uckfield, Sussex, **Sarah** (17,851), born November 7, 1899, bred by G. E. Hawkins, Holt House, Leziate, King's Lynn; s., The Count (5394); d., Sheary 4th (12,962); s. of d., Parishioner (3238).

V. H. C.—F. H. BAXENDALE, J.P., **Red Tulip** (17,507), born August 27, 1899; s., Pigeon Blood Ruby (5109); d., Pretty Tulip 2nd (10,644); s. of d., Ruby King (2925).

CLASS 78.—Red Polled Heifer, calved in 1900. [5 entries.]

I. (£10.)—J. HAMMOND, M.R.C.V.S., Bale, Norfolk, **Davy 204th**, born January 22, 1900; s., Majolini; d., Davy 142nd; s. of d., Davyson 78th.

II. (£5.)—LORD AMHERST OF HACKNEY, Didlington Hall, Brandon, Norfolk, **Popsey 6th** (17,392), born March 19, 1900; s., Redvers (6570); d., Poppety 2nd (4289); s. of d., Didlington Davyson 2nd (657).

R.—Sir T. V. S. GOOCH, Bart., Benacre Hall, Wrentham, Suffolk, **Meddlesome Mattie** (vol. iv., 17,128), born May 11, 1900, bred by Jas. Platt, Howbury Hall, Bedford; s., Champion (5370); d., Minnie (8045); s. of d., Earl (2279).

H. C.—F. H. BAXENDALE, J.P., Framfield Place, Uckfield, Sussex, **Pansie** (17,324), born February 4, 1900, bred by G. E. Hawkins, Holt House, Leziate, King's Lynn; s., The Count (5394); d., Palmleaf (11,667); s. of d., Parishioner (3238):—and R. P. COOPER, Ashlyns, Great Berkhamstead, **Ashlyns Firtree**, born July 23, 1900; s., Red Knight (5818); d., Lady Firtree 3rd (13,712); s. of d., Lord Nork (4010).

CLASS 79.—Red Polled Heifer, calved in 1901. [6 entries.]

I. (£10.)—HON. A. E. FELLOWES, M.P., Honingham Hall, Norwich, **Avalanche**, born January 20, 1901; s., The Pope; d., Agnes; s. of d., Young Alfred.

II. (£5.)—R. P. COOPER, Ashlyns, Great Berkhamstead, **Ashlyns Chocolate**, born January 8, 1901; s., Caistor Minotaur (4786); d., Chocolate (12,126); s. of d., Uncas (3754).

III. (£2.)—Sir W. D. CORBET, Bart., Acton Reynald, Shrewsbury, **Acton Dream**, born April 14, 1901; s., Logan (6391); d., Hannah (13,591); s. of d., Plauet (4579).

R.—HON. A. E. FELLOWES, M.P., **Amy**, born March 21, 1901; s., Ajax; d., Armlet; s. of d., Young Alfred.

C.—Sir T. V. S. GOOCH, Bart., Benacre Hall, Wrentham, Suffolk, **Red Topsy**, born January 1, 1901, bred by J. Platt, Howbury Hall, Bedford; s., **Champion** (5370); d., **Red Lass** (14,121); s. of d., **Red Top** (8911):—and **EARL OF RADNOR**, Longford Castle, Salisbury, **Jewel Case**, born July 9, 1901, bred by J. E. Platt, Howbury Hall, Bedford; s., **Red Knight**; d., **Necklace**; s. of d., **Red Prince**.

ABERDEEN-ANGUS.

(The First Prize in Class 80 was given by the English Aberdeen-Angus Cattle Association.)

CLASS 80.—*Aberdeen-Angus Bull, calved before December 1st, 1900.*
[1 entry.]

I. (£10) and Champion.*—J. J. CRIDLAN, Home Farm, Maisemore Park, Gloucester, black, **Elite** (16,513), born December 14, 1898, bred by A. Egginton, South Ella, Hull; s., **Mailbag** (13,637); d., **Elite** (24,028); s. of d., **Eshros** (10,816).

CLASS 81.—*Aberdeen-Angus Bull, calved on or after December 1st, 1900.* [2 entries.]

I. (£10).—J. H. BRIDGES, Langshott, Horley, Surrey, black, **Parthian** (19,589), born December 20, 1900; s., **Equerry of Ballindalloch** (9136); d., **Pride of Langshott** (25,122); s. of d., **Edric** (9110).

R. & H. C.—R. W. HUDSON, Danesfield, Marlow, Bucks, black, **Danesfield Jester**, born January 15, 1901; s., **Junior Jehu** (14,536); d., **Joyful of Ballindalloch** (22,999); s. of d., **Prospero of Dalmore** (11,208).

CLASS 82.—*Aberdeen-Angus Cow or Heifer, in-Milk, calved before December 1st, 1899.* [3 entries.]

I. (£10).—R. W. HUDSON, Danesfield, Marlow, Bucks, black, **Effulgent of Danesfield** (23,617), born January 9, 1899; s., **Eric Macdonald** (12,475); d., **Effulgent** (23,527); s. of d., **Albion** (6525).

R. & H. C.—J. H. BRIDGES, Langshott, Horley, Surrey, black, **Madoqua** (25,419), born December 10, 1896, bred by A. Geddes, Blairmore Huntley, N.B.; s., **Eimeo** (12,460); d., **Waterside Madge 4th** (22,527); s. of d., **Miclas** (10,255).

CLASS 83.—*Aberdeen Angus Heifer, calved on or after December 1st, 1899.* [3 entries.]

I. (£10).—J. H. BRIDGES, Langshott, Horley, Surrey, black, **Maureen** (29,762), born December 8, 1899, bred by P. Chalmers, Aldban Castle, Brechin, N.B.; s., **Marvel of Advie** (16,884); d., **Myrta** (25,176); s. of d., **Enthusiast of Ballindalloch** (8289).

II. (£5).—R. W. HUDSON, Danesfield, Marlow, Bucks, black, **Star of Danesfield 2nd**, born January 9, 1900; s., **Junior Jehu** (14,536); d., **Wandering Star** (22,933); s. of d., **Gipsy Rover** (10,942).

* Given by the Polled Cattle Society, a Gold Medal for the Best Breeding Animal in Classes 80 to 84.

R. & H. C.—R. W. HUDSON, black, **Alice of Tedfold 11th**, born April 9, 1900, bred by C. W. Schroeter, Tedfold, Sussex; s., Jackanapes of Ballindalloch (13,517); d., Alice of Tedfold 6th (24,663); s. of d., Epigram of Cortachy (8292).

CLASS 84.—*Aberdeen-Angus Heifer, calved on or after December 1st, 1900.* [6 entries.]

I. (£10.)—R. W. HUDSON, Danesfield, Marlow, Bucks, black, **Milady of Danesfield**, born January 3, 1901; s., Junior Jehu (14,536); d., Milady of Ruthven (27,220); s. of d., Everest of Ballindalloch (7520).

II. (£5.)—J. H. BRIDGES, Langshott, Horley, Surrey, black, **Barbarina 2nd** (31391), born January 10, 1901; s., Equerry of Ballindalloch (9136); d., Barberry of Laughton (22,819); s. of d., Jovial Souter (7634).

III. (£2.)—R. W. HUDSON, black, **Rhona 2nd of Danesfield**, born January 12, 1901; s., Junior Jehu (14,536); d., Rhona of Ballindalloch (24,211); s. of d., Prospero of Dalmore (11,208).

C.—J. J. CRIDLAN, Home Farm, Maisemore Park, Gloucester, black, **Maid Marian**, born January 3, 1901; s., Mason (15,728);—and his black, **Pride of My Heart**, born December 26, 1900; s., Eimeo (12,450); d., Pride of Kippendavie 13:h (27,613); s. of d., Norfolk 5th (7022).

JERSEY.

CLASS 85.—*Jersey Bull, calved in 1898 or 1899.* [2 entries.]

I. (£10.)—LORD ROTHSCHILD, Tring Park, Tring, Herts, whole, **Tudor Boy**, born May 3, 1899; s., Oxford Dreadnought (5683); d., Tulip 7th (vol. x. p. 350); s. of d., Spot's Lad (4389).

R. & V. H. C.—MRS. C. MCINTOSH, Havering Park, Essex, grey, **Halburton's Prince**, born May 10, 1899, bred by P. G. Bequet, St. Saviour's, Jersey; s., Financial King (2624); d., Halburton's Beauty (7676).

CLASS 86.—*Jersey Bull, calved in 1900.* [10 entries.]

I. (£12.)—The BISHOP OF Ipswich, Burgh House, near Great Yarmouth, whole, **Carnatie's Gem**, born September 15, 1900, bred by Mrs. McIntosh, Havering Park, Romford, Essex; s., Adonis; d., Havering Carnatie; s. of d., Montpellier.

II. (£5.)—J. BRUTTON, 7, Princes Street, Yeovil, brown and white, **Golden Star**, born June 30, 1900; s., Mon Plaisir (6340); d., Western Star (vol. xii.); s. of d., Lustre (6320).

III. (£2.)—MRS. C. MCINTOSH, Havering Park, Essex, fawn, **Brompton**, born April 2, 1900, bred by G. Baal, St. Martin's, Jersey; s., Bessie's Knight (2518); s. of d., Berne (8297, H.C.).

R. & V. H. C.—Col. H. McCALMONT, C.B., M.P., Cheveley Park, Newmarket, dark brown, **Chancellor**, born April 21, 1900; s., Chancellor; d., Lottie; s. of d., Golden Fern's Lad.

V. H. C.—LADY SMYTH, Ashton Court, Bristol, whole, **Promotion**, born April 29, 1900, bred by Lord Rothschild, Tring Park, Herts; s., Ox'ord Duke (5315); d., Perry Farm Leonie; s. of d., Blue Prince (3096).

H. C.—C. W. ARMITAGE, Woodlands, Northaw, Potters' Bar, bronze, **Mignonne's Champion**, born March 19, 1900; s., **Leyland's Champion** (6303); d., **Mignonne** (vol. viii. p. 218); s. of d., **Pasha** (5319):—and **Miss STANDISH**, Marwell Manor, Eastleigh, Hants, **Lord Carnation** (J.H.B., 3136), born August 19, 1900, bred by P. Vautier, St. Owen's, Jersey; s., **Carnation's King** (2826, J.H.B.); d., **Gleenie 4th** (8237, J.H.B.); s. of d., **Devotion's Lad** (6193).

C.—E. SMITH, Newton Farm, Bromsgrove, black, **C.I.V.**, born April 24, 1900, bred by R. A. Pepin, Jersey; s., **Ajax** (6759); d., **Promptitude 2nd** (P.S.C., 2325); s. of d., **La Commune's Prince** (2584).

CLASS 87.—*Jersey Bull, calved in 1901. [19 entries.]*

I. (£12).—Admiral Hon. T. S. BRAND, Glynde Place, Lewes, whole, **Doctor**, born July 18, 1901; s., **Vali** (7063); d., **Astra**; s. of d., **Spartan** (4388).

II. (£5).—LORD ROTHSCHILD, Tring Park, Tring, Herts, whole, **Duke of Cartaret**, born April 29, 1901; s., **Oxford Duke** (5314); d., **Brown Duchess of Cartaret** (vol. viii. p. 190); s. of d., **Golden Lad** (3324).

III. (£2).—A. GIBBS, Tyntesfield, Bristol, mulberry, **Perry Farm Clipper**, born February 20, 1901, bred by J. A. Desreux, St. Mary's, Jersey; s., **Reminder** (2419); d., **Pansy's Lass 3rd** (7135).

R. & V. H. C.—MARQUIS OF WINCHESTER, fawn, **Doricles**, born July 14, 1901, bred by the Duke of Marlborough, Blenheim; s., **Dewey**; d., **Leyland's Lass**; s. of d., **Oxford Prince**.

V. H. C.—A. Pocock, Freegrove, Calne, Wilts, whole, **Hercules**, born May 1, 1901, bred by F. Le Masurier, St. Peter's, Jersey; s., **Baron** (2845); d., **Martha** (8569):—and MARQUIS OF WINCHESTER, fawn, **Companion**, born May 5, 1901, bred by J. C. Lewis, Jersey; s., **Forfarshire**; d., **Cuckoo**.

H. C.—J. BRUTTON, 7, Princes Street, Yeovil, dark grey, **Dulce's Union**, born April 3, 1901; s., **Unionist** (6096); d., **Dulce** (vol. x. p. 235); s. of d., **Golden Lad** (3342):—J. SPENCER-EVANS, The Chase, Southwater, Sussex, whole, **Mousy's Owl**, born March 14, 1901; s., **Successor** (2783); d., **Mousy 10th**; s. of d., **The Owl** (2195):—Col. H. McCALMONT, C.B., M.P., Cheveley Park, Newmarket, dark brown, **Black Cap**, born April 12, 1901; s., **Chief Justice**; d., **Sweet Wonder 2nd**; s. of d., **Casius**:—and A. Pocock, whole, **Golden Summer**, born May 14, 1901, bred by Col. McCalmont, Bishopswood, Ross; s., **Golden Spring** (6576); d., **Twilight**; s. of d., **Golden Fern's Lad** (2160).

C.—Admiral Hon. T. S. BRAND, whole, **Decimus**, born June 28, 1901; s., **Vali** (7063); d., **Rebecca**; s. of d., **Dairyman** (3204):—and **Miss STANDISH**, Marwell Manor, Eastleigh, Hants, grey, **Viscount**, born April 9, 1901, bred by R. R. Lempiere, Rozel Manor, Jersey; s., **Diploma** (2863, J.H.B.); d., **Golden Mary** (8080, J.H.B.); s. of d., **The Owl** (5682).

CLASS 88.—*Jersey Cow, in-Milk, calved before 1899. [24 entries.]*

I. (£12).—LORD ROTHSCHILD, Tring Park, Tring, Herts, whole, **Beresford Pride**, born August 20, 1893, bred by M. Le Gallais, Grouville, Jersey; s., **Orme** (4296); d., **Turtle Dove** (4354, P.S.H.C.); s. of d., **John Brown** (5608).

II. (£5).—Miss STANDISH, Marwell Manor, Eastleigh, Hants, grey, **St. Helier's Princess** (8415, F.S., J.H.P.), born 1896, bred by S. H. Blampied, Trinity, Jersey.

III. (£2).—Mrs. C. McINTOSH, Havering Park, Essex, fawn, **Clorissa 3rd**, born June 3, 1894, bred by A. Marguerie, Trinity, Jersey; s., Silver Grey (1803); d., Clorissa 2nd (4989); s. of d., Elderly 2nd (1393).

R. & V. H. C.—C. W. ARMITAGE, Woodlands, Northaw, Potters' Bar, dark fawn, **Clementine**, born August 20, 1892, bred by F. W. Le Brocq, Jersey; s., Clarence (1494); d., Beauty of Windsor (3532).

V. H. C.—C. W. ARMITAGE, broken fawn, **Dot**, born May 22, 1897, bred by G. E. Noel, Jersey; s., Golden Fern's Lad (6236); d., Newark 2nd (5641):—A. MILLER-HALLETT, Goddington, Chelsfield, Kent, broken, **Carol**, born April 26, 1898, bred by Lady de Rothschild, Aston Clinton, Tring; s., Chieftain (5289); d., Harmony; s. of d., Spot's Lad (4389):—and The MARQUIS OF WINCHESTER, Amport, Andover, fawn, **Guarantee 5th**, born March 12, 1897, bred by Lord Rothschild, Tring, Herts; s., Spot's Lad; d., Guarantee 4th; s. of d., Badiers Rival.

H. C.—EARL CADOGAN, Culford Hall, Bury St. Edmunds, fawn, **Beatrice**, born July 1, 1898; s., Bessemer; d., Golden Streak; s. of d., Golden Fluke:—A. GIBBS, Tyntesfield, Bristol, whole, **Lass of Jersey 2nd**, born April 18, 1893, bred by J. E. Grandin, St. Owen's, Jersey; s., Courage (5122); d., Lass of Jersey (2811, P.S.C.); s. of d., Jupiter (3418):—Col. H. McCALMONT, C.B., M.P., Cheveley Park, Newmarket, broken, **Toupée**, born May 25, 1898; s., Distinction's Security; d., Wigton 6th:—and Miss STANDISH, grey, **Opal** (8695, F.S., J.H.B.), born 1898, bred by J. A. Gibant, Trinity, Jersey.

C.—Mrs. R. L. BROWN, Hallfield, Chard, fawn, **Remember**, born July 30, 1897, bred by L. Lelucu, Grouville, Jersey; s., Caumnis Lad (2257); d., Miranda (6363):—EARL CADOGAN, grey, **Golden Streak**, born April 23, 1896; s., Golden Fluke; d., Sunbeam; s. of d., Strawberry:—Miss STANDISH, fawn, **Electra** (7924, J.H.B.), born October 20, 1897, bred by J. Amy, St. Martin's, Jersey; s., Golden Fern's Lad (6236); d., Carnation's Glory 8th (5875, J.H.B.); s. of d., Cato (4793):—and R. P. WHEADON, Ilminster, fawn, **Hantville's Surprise**, born May 30, 1898, bred by C. Necolle, Jersey.

CLASS 89.—Jersey Heifer, in-Milk, calved in 1899. [18 entries.]

I. (£10).—Mrs. C. McINTOSH, Havering Park, Essex, fawn and white, **Vivienne**, born January 16, 1899, bred by F. Touzel, Grouville, Jersey; s., Marcus (2461); d., Chicarde 3rd (4232).

II. (£5).—J. SPENCER-EVANS, The Chase, Southwater, Sussex, broken, **Bagdad 2nd**, born April 12, 1899, bred by F. P. Hacquoil, St. Owen's, Jersey; s., Mon Plaisir (2548); d., Bagdad; s. of d., La Chasse Prince (1927).

III. (£2).—J. BRUTTON, 7, Princes Street, Yeovil, brown, **Benita 2nd**, born December 2, 1899, bred by T. Le Marinice, St. John's, Jersey; s., Kirconnel 2nd (2595); d., Benita (7909).

R. & V. H. C.—Sir T. V. S. GOOCH, Bart., Benacre Hall, Wrentham, Suffolk, whole, **Wild Rose**, born May 12, 1899, bred by T. Loader Brown; s., Ratler (6030); d., Moss Rose (vol. ix. p. 295); s. of d., Pilot (5698).

V. H. C.—MARQUIS OF WINCHESTER, Amport, Andover, fawn, **Lady Belle**, born April 12, 1899, bred by F. Billot, jun., St. Clements, Jersey; s., Oyster 2nd; d., Lodie 2nd; s. of d., Lobel.

H. C.—J. BRUTTON, brown, **Mina 4th**, born April 22, 1899; s., Golden Lad (5567); d., Mina 2nd; s. of d., Jerome (1980):—A. MILLER-HALLETT, Goddington, Chelsfield, Kent, broken, **Acorn**, born June 1, 1899, bred by

Lord Rothschild, Tring Park, Herts; s., Oxford Duke (5314); d., **Alicante** (vol. vii. p. 175); s. of d., Count Wolseley (3191):—and R. P. WHEADON, Ilminster, fawn, **Rosy 2nd**, born May 30, 1899; s., Silvio (6060); d., Edith's Pet (235, vol. x.); s. of d., Regular (1971).

C.—BISHOP OF IPSWICH, Burgh House, Great Yarmouth, dark fawn, **Texture**, born July 28, 1899, bred by Lady de Rothschild, Aston Clinton, Bucks; s., Pontorson's Lad; d., Soucique; s. of d., Sir June:—and E. SMITH, Newton Farm, Bromsgrove, broken, **White Rosebud**, born July 2, 1899, bred by P. Ahier, Jersey; s., Golden Fern's Lad (6236); d., Little White Rose (6413); s. of d., Fauvette Boy.

CLASS 90.—Jersey Heifer, calved in 1900. [16 entries.]

I. (£10.)—LORD ROTHSCHILD, Tring Park, Tring, Herts, dark brown, **Orleans' Queen**, born February 15, 1900, bred by J. Journeaux, Jersey; s., Carnation's Crown (2747); d., Maid of Orleans (6318).

II. (£5.)—MRS. C. MCINTOSH, Havering Park, Essex, grey and white, **Marjorie**, born March 1, 1900, bred by Mrs. Valpy, Grouville, Jersey; s., Manager (2655); d., Mary Gold (4188).

III. (£2.)—MARQUIS OF WINCHESTER, Amport, Andover, fawn, **Dusky Jane**, born July 15, 1900, bred by W. Alexander, St. Mary's, Jersey; s., Bessie's Knight; d., Modele; s. of d., Baron of St. John 2nd.

R. & V. H. C.—COL. H. MCCALMONT, C.B., M.P., Cheveley Park, Newmarket, dark fawn, **Adieu**, born April 13, 1900; s., Chancellor; d., Farewell 2nd; s. of d., Caligula.

V. H. C.—EARL CADOGAN, Culford Hall, Bury St. Edmunds, grey, **Sunbeam**, born March 15, 1900; s., Blucher; d., Golden Streak; s. of d., Golden Fluke.

H. C.—MARQUIS OF WINCHESTER, fawn, **Red Lilly**, born April 28, 1900, bred by Mr. Nicholas, Cabot, Jersey; s., Badier's Risk; d., Badier's Maria.

C.—COL. H. MCCALMONT, C.B., M.P., light fawn, **Bravura**, born June 10, 1900; s., Bravado; d., Wigton 6th; s. of d., Flora's Lad.

CLASS 91.—Jersey Heifer, calved in 1901. [26 entries.]

I. (£10.)—A. MILLER-HALLETT, Goddington, Chelsfield, Kent, broken, **Balance**, born June 4, 1901, bred by Lady de Rothschild, Aston Clinton, Tring, Herts; s., Oxford Brigadier; d., Bess; s. of d., Chieftain (5829).

II. (£5.)—LORD ROTHSCHILD, Tring Park, Tring, Herts, broken, **Glitter**, born June 1, 1901; s., Flying Fox (6859); d., Grouvillaise (7753); s. of d., Rivage (5713).

III. (£2.)—COL. H. MCCALMONT, C.B., M.P., Cheveley Park, Newmarket, dark fawn, **Winifred**, born May 23, 1901; s., Chancellor; d., Wigton 6th; s. of d., Flora's Lad.

R. & V. H. C.—EARL CADOGAN, Culford Hall, Bury St. Edmunds, fawn, **Lady Disdain**, born April 15, 1901; s., Havering Pride; d., Lady Blucher; s. of d., Blucher.

V. H. C.—C. W. ARMITAGE, Woodlands, Northaw, Potters' Bar, mulberry slightly broken, **Pilot's Legacy 12th**, born June 25, 1901; s., Dancer's Bismarck (6187); d., Pilot's Legacy 5th (vol. x. p. 313); s. of d., Golden Lad (1242):—and his fawn, **Farineuse 4th**, born August 2, 1901;

s., Sultan's Pilot (7042); d., Farineuse 3rd (vol. xii. p. 259); s. of d., La Chasse Prince (1927):—J. BRUTTON, 7, Princes Street, Yeovil, light brown, **Golden Empress**, born July 25, 1901, bred by R. J. Pope, Plumpton, Sussex; s., Beresford Climax (6468); d., Beresford D'or; s. of d., Lord Charles Beresford:—LORD ROTHSCHILD, broken, **Legacy**, born July 17, 1901, bred by Lady de Rothschild, Aston Clinton, Tring; s., Oxford Brigadier; d., Leaflet; s. of d., Pontorson's Lad (6364):—and MARQUIS OF WINCHESTER, Amport, Andover, fawn, **Lady Rotha**, born July 9, 1901, bred by Lady de Rothschild, Aston Clinton; s., Red Rover; d., Lady Rowena; s. of d., Regent.

H. C.—E. SMITH, Newton Farm, Bromsgrove, broken, **Maissonnette Stella**, born February 21, 1901; s., Hector 2nd (2903, P.S.C.); d., Bright Eyes 5th; s. of d., Egyptian (6541):—LADY SMYTH, Ashton Court, Bristol, whole, **Heartsease 1st**, born March 18, 1901, bred by the late Sir J. H. Greville-Smyth, Bart., Ashton Court, Bristol; s., Oxford Beau (6665); d., Heartsease (vol. x. p. 262); s. of d., Woolloomooloo (5447):—and her whole, **Nancy**, born July 5, 1901, bred by Duke of Marlborough, Blenheim Palace, Woodstock; s., Dewey (6522); d., Primrose; s. of d., General Beresford (5554):—The Hon. Mrs. TREMAYNE, Sydenham, Lew Down, R.S.O., Devon, fawn, **Regalia**, born January 30, 1901, bred by the late J. Tremayne, Heligan, St. Austell, Cornwall; s., Desmond (6521); d., Jewel (vol. vi. p. 295); s. of d., Lily's Prince (2607):—and her grey, **Egidia**, born May 6, 1901, bred by the late J. Tremayne, Heligan, St. Austell, Cornwall; s., Desmond (6521); d., Medina (vol. xi. p. 119); s. of d., Hannibal (5584).

C.—J. BRUTTON, fawn and white, **Brunon 5th**, born February 4, 1901, bred by T. Renouf, jun., St. Martin's, Jersey; s., Tavillon's Hero (2865); d., Brunon 3rd (7146):—A. GIBBS, Tyntesfield, Bristol, whole, **Lady Jane**, born November 8, 1901; s., Black Prince (6137):—and his whole, **Margate**, born November 26, 1901; s., Bobs; d., Marriette:—EARL OF MOUNT EDGECUMBE, Mount Edgecumbe, Plymouth, whole colour, **Alexandria**, born January 19, 1901, bred by the late J. Tremayne, Heligan, St. Austell, Cornwall; s., Desmond (6521); d., Young Queen; s. of d., Eminent (4831):—and LORD ROTHSCHILD, whole, **Crystal Brook Tiny**, born April 22, 1901, bred by J. Carson, Crystal Brook Farm, Theydon Bois, Essex; s., Spring's Glory (6413); d., Jessamine 9th (vol. x. p. 266); s. of d., Lord Chancellor (5624).

Special Prize given by Sir James Blyth, Bart.—The Blythwood Challenge Silver Bowl, weighing 25 ounces, for the Best Cow or Heifer, in-Milk, in any of the Jersey Classes, bred in Great Britain or Ireland, to be awarded by inspection (see Special Condition 61 in Prize Schedule).

I.—A. MILLER-HALLETT, Goddington, Chelsfield, Kent, broken, **Carol**, born April 26, 1898, bred by Lady de Rothschild, Aston Clinton, Tring; s., Chieftain (5289); d., Harmony; s. of d., Spot's Lad (4389).

GUERNSEY.

CLASS 92.—Guernsey Bull, calved in 1898 or 1899. [4 entries.]

I. (£10).—W. A. GLYNN, Seagrove, Seaview, Isle of Wight, orange, fawn and white, **Rowland of Seaview**, born June 20, 1899; s., Hopeful 7th (780); d., Malena des Isles 2nd (3097).

II. (£5.)—CJL. E. ST. AUBYN, Glvnn, Bodmin, fawn, **Duke of Bliegs**, born December, 1898, bred by E. J. Winslow, Rue Pondseuse, St. Martin's, Guernsey; s., Kruger 1st (1130 P.S.); d., Winslow's Daisy (2097 F.S.).

R.—Mrs. MONTEFIORE, Worth Park, Crawley, fawn and white, **Fair Boy of Calais** (1373), born June 5, 1899, bred by T. Le Pordeon, Guernsey; s., Frances Masher 11 (1102 P.S., R.G.A.S.); d., Rose of the Barras 2nd (4474, R.G.A.S.).

CLASS 93.—Guernsey Bull, calved in 1900. [8 entries.]

I. (£12.)—LADY TICHBORNE, Tichborne Park, Alresford, Hants, red and white, **Rival** (1343, E.G.H.B.), born April 5, bred by J. C. Forster, Clatford Mills, Andover, Hants; s., Rival of Mont Marché (1164, P.S., R.G.A.S.); d., Clatford Gentle (4746).

II. (£5.)—Mrs. MONTEFIORE, Worth Park, Crawley, fawn and white, **King Edward** (1427, P.S.), late Keyham, born June 10, bred by J. Le Page, Hill Farm, St. Andrew's, Guernsey; s., Francis Masher 2nd (1102, P.S.); d., Zara (3471, P.S.); s. of d., Masher 2nd (858, P.S.).

III. (£2.)—Mrs. FOWNES, The Manor House, Weston Bampfylde, Sparkford, Somerset, fawn and white, **Freedom Sly**, born February, bred by J. Simon, Guernsey; s., Sly of the Bordages; d., Princess Rhea.

R.—Mrs. FOWNES, fawn and white, **Roland of the West**, born April 2, bred by J. Martel, Guernsey; s., Royal of the Preel (1235); d., Tugela (2115).

H. C.—Hon. Mrs. A. B. HAMILTON, Burley Lodge, Ringwood, Hants, fawn, **Loyalist 2nd**, born June 28; s., His Highness (E.G.H.B., 1207); d., Flounce 6th (E.G.H.B., 2667).

CLASS 94.—Guernsey Bull, calved in 1901. [11 entries.]

I. (£12.)—W. A. GLYNN, Seagrove, Seaview, Isle of Wight, orange, fawn and white, **Sunshine**, born March 25; s., Landsman (1120); d., Lady Sunbeam (3804).

II. (£5.)—Mrs. MONTEFIORE, Worth Park, Crawley, Sussex, fawn and white, **Marshal**, born August 4; s., Just in Time (1170, P.S., R.G.A.S.); d., Lady Norman (5187).

III. (£2.)—LADY TICHBORNE, Tichborne Park, Alresford, Hants, dark fawn, **Merry Anton** (1400), born May 2, bred by J. C. Forster, Clatford Mills, Andover, Hants; s., May Day (1132, E.G.H.B.); d., Antona 5th (2851, E.G.H.B.).

R.—LADY TICHBORNE, dark fawn, **May King** (1395), born May 9, bred by Sir H. D. Tichborne, Bart., Tichborne Park, Alresford, Hants; s., Itcher Jewel (1112); d., May Rose (3648).

H. C.—Mrs. R. C. BAINBRIDGE, Elfordleigh, Plympton, South Devon, yellow and white, **Arthur**, born June 6; s., Matador (1022); d., Jane (4979, G.H.B.).

C.—Mrs. R. C. BAINBRIDGE, orange, fawn and white, **Roman Emperor**, born January 3, bred by W. A. Glynn, Seagrove, Seaview, Isle of Wight s., Frolic 6 (899); d., Roma of Seagrove (4629).

CLASS 95.—Guernsey Cow, in-Milk, calved before 1899. [14 entries.]

I (£12).—**LADY TICHBORNE**, Tichborne Park, Alresford, Hants, red and white, **Itchen Daisy of the Préel** (5154), born December 2, 1889, bred by R. A. Herivel, High Street, Alderney.

II (£5).—**E. A. HAMRO**, Hayes Place, Hayes, Kent, red, **Hayes Rosie**, born December 15, 1895, bred by T. Andoire, Alderney; s., Jumbro; d., Flower.

III (£2).—**E. A. HAMRO**, dark fawn and white, **Express**, born March 26, 1895, bred by — Robin, Elibots, St. Peter's Port, Guernsey; s., Rydale 4th (865, P.S.); d., Lively of the Frouillits (1961, F.S.).

R.—**Mrs. R. C. BAINBRIDGE**, Elfordleigh, Plympton, South Devon, pale red and white, **Jane** (3770, E.G.H.B.), born June 1, 1895, bred by J. Torode, Grou, St. Saviour's, Guernsey; s., Sauteur; d., Janette.

H. C.—**Mrs. MONTEFIORE**, Worth Park, Crawley, Sussex, fawn and white, **Zara** (3471, P.S., R.G.A.S.), born February 3, 1893, bred by J. Le Page, Hill Farm, St. Andrew's, Guernsey; s., Vladimir (655, P.S.); d., Fanny of the Dorit (1692, F.S.).

C.—**LADY TICHBORNE**, fawn, **Itchen Primrose 2nd** (5158), born July 19, 1898, bred by T. M. Simon, Les Caches, St. Saviour's; s., His Majesty (952, P.S., R.G.A.S.); d., Primrose of Offspring 2nd (2578, P.S., R.G.A.S.).

CLASS 96.—Guernsey Heifer, in-Milk, calved in 1899. [8 entries.]

I (£10).—**LADY TICHBORNE**, Tichborne Park, Alresford, Hants, fawn and white, **Itchen Primrose** (5157), born February 7, bred by Mrs. Le Messurier, Lages, St. Peter-in-the-Wood; s., Francis Jewel 2nd; d., Polly.

II (£5).—**Mrs. FOWNES**, The Manor House, Weston Bampfylde, Sparkford, Somerset, fawn and white, **Claremont Ruth 4th**, born May 3, bred by J. Bradbeer; s., Claremont Westward Ho (1091); d., Golden Love 2nd (4069).

III (£2).—**LADY TICHBORNE**, red and white, **Itchen Claudia** (5152), born April 14, bred by J. W. Martel, Préel, Castel; s., Orson (296, F.S.); d., Daisy of the Préel (2083, F.S.).

R.—**Mrs. MONTEFIORE**, Worth Park, Crawley, Sussex, fawn and white, **Lady Fashion** (4521), born September 1, bred by G. S. Motion, Horley, Surrey; s., Alla a Dale (850); d., Greenfield Fashion (3735).

CLASS 97.—Guernsey Heifer, calved in 1900. [13 entries.]

I (£10).—**W. MADDICK**, South Wonford, Heavitree, yellow and white, **Miss Evelyn**, born February 1; s., Necklace 2nd (712, E.G.H.B.); d., Miss Evelyn (1395, E.G.H.B.); s. of d., The Earl.

II (£5).—**Hon. Mrs. A. B. HAMILTON**, Burley Lodge, Ringwood, Hants, fawn and white, **Rosemary 4th** (E.G.H.B., 4974), born June 8; s., His Royal Majesty (E.G.H.B., 1106); d., Rosemary 2nd (E.G.H.B., 2304).

III (£2).—**Mrs. FOWNES**, The Manor House, Weston Bampfylde, Sparkford, Somerset, red and white, **Princess Lilly**, born January 18, bred by J. Elliott, Donit, St. Saviour's, Guernsey; s., Sly of the Bondages (1110); d., Princess of Lillyvale (4525).

R.—**LADY TICHBORNE**, Tichborne Park, Alresford, Hants, fawn and white, **Hey Day** (4832), born March 12, bred by C. Barfoot, The Lake, Bishopstoke; s., Harold (997); d., Silver Bell (3925).

H. C.—Col. H. W. SHAKERLEY, Burgate, Godalming, Surrey, fawn, **Marie des Prevost**, born May 28; s., Captain Parry (971); d., Polly des Prevost (4245); s. of d., His Majesty (952, P.S., R.G.A.S.).

C.—Mrs. R. C. BAINBRIDGE, Elfordleigh, Plympton, South Devon, yellow and white, **Elfordleigh Milkmaid**, born November 28; s., Brixham Beau (866); d., Young Buttermaid of Yealmpton (4329); s. of d., Narcissus (561):—and Major-Gen. G. M. BATTYF, Frogna, Chelston, Torquay, fawn and white, **Evelyn**, born May 2, bred by—Maddick, Little Anstey's Farm, S. Wonford, Heavitree, Exeter; s., Nicklace 3rd; d., Miss Evelyn.

CLASS 98.—Guernsey Heifer, calved in 1901. [9 entries.]

I. (£10.)—Mrs. MONTEFIORE, Worth Park, Crawley, fawn and white, **La Fontaine 2nd** (5192), born May 15; s., Columbia (1185, P.S.); d., La Fontaine (5121) (late 2nd, 6299, G.H.B.).

II. (£5.)—W. A. GLYNN, Seagrove, Seaview, Isle of Wight, orange, fawn and white, **Florry 7th**, born April 8; s., Landsman (1120); d., Frolly 5th (3368).

III. (£2.)—E. A. HAMBRO, Hayes Place, Hayes, Kent, fawn and white, **Hayes Nellie**, born May 1; s., Challenger (1189); d., Nellie of the Honquette.

R.—**LADY TICHBORNE**, Tichborne Park, Alresford, Hants, red and white, **Itchen Daisy 3rd** (5153), born January 3rd, bred by Sir H. D. Tichborne, Bart., Tichborne Park, Alresford, Hants; s., May Day (1132); d., Daisy's Gem (3341).

H. C.—J. HULL, The Mount, Bartley, Totton, Hants, red with white markings, **Mount Laurie** (5248, E.G.C.S.H.B.), born June 5; s., Muffin-Man (1234, E.G.C.S.H.B.); d., Langlete (3432, E.G.C.S.H.B.); s. of d., Signalman (585, E.G.H.B.).

KERRY.

CLASS 99.—Kerry Bull, calved in 1899, 1900, or 1901. [6 entries.]

I. (£7) and Champion.*—ROBERTSON AND SONS, Church Farm, Babraham, Cambs, black, **La Mancha Tim** (Lord Haddon), born February 16, 1901, bred by C. B. Marlay, Belvedere House, Mullingar; s., Finn MacCumhaul (445); d., Grenagh Annis 2nd.

II. (£5.)—J. THORLEY, Ringdale, Faringdon, Berks, black, **Nap**, born April 23, 1901, bred by H. L. Tottenham, Castle Blayney; s., Finn MacCumhaul; d., Aicme Whitehorn; s. of d., Aicme Bell.

III. (£2.)—W. VICARY, The Knoll, Newton Abbot, Devon, black, **Aller Aicme Rex**, born October 22, 1900; s., Stonelands Kidmore King (398, K.H.B.); d., Topsey; s. of d., Aicme Rex (237, K.H.B.).

R. & H. C.—C. J. CORY, J.P., Llantarnam Abbey, Monmouthshire, black, **Llantarnam Lancelot**, born June 22, 1901; s., Waterville Knight

* Given by B. de Bertodano, Esq., for the Best Animal in Class 99, 100 or 101.—The Bertodano Challenge Cup, value 25 guineas. The Cup to become the property of an Exhibitor winning it three years in succession.

(R.D.S., 368); d., Abbeyleix Nora 5th (R.D.S., 2336); s. of d., King Conn (R.D.S., 296).

CLASS 100.—Kerry Cow or Heifer, in-Milk, calved in or before 1899.
[7 entries.]

I. (£7) and B. for Champion.*—ROBERTSON AND SONS, Church Farm, Babraham, Cambridge, **La Mancha Vesta**, born 1894.

II. (£5).—W. VICARY, The Knoll, Newton Abbot, Devon, **Maid of Kildare** (K.H.B., 2326), born May 20, 1895, bred by Lord Clonmell, Bishop's Court, Kildare, Ireland; s., Aicme Rex (237, K.H.B.); d., Kathleen (1549, K.H.B.); s. of d., Channon (103).

III. (£2).—C. J. CORY, J.P., Llantarnam Abbey, Monmouthshire, **La Mancha Playful**, born April 3, 1899, bred by Robertson and Sons, Church Farm, Babraham, Cambridge.

R. & H. C.—ROBERTSON AND SONS, **La Mancha Sweet Kiss**, born 1897.

H. C.—J. THORLEY, Ringdale, Faringdon, Berks, **La Mancha Gipsy Queen**, born March, 1898.

C.—C. J. CORY, J.P., **Prudence** (R.D.S., vol. vi. p. 12; E.S.H.B., 224, vol. i.), born May 15, 1897, bred by Viscount de Vesci, Abbeyleix; s., Scarrif (R.D.S.H.B., 310); d., Prince 3rd (R.D.S.H.B., 1260); s. of d., Gore Admiral (R.D.S.H.B., 140).

CLASS 101.—Kerry Heifer, calved in 1900 or 1901. [6 entries.]

I. (£7).—J. THORLEY, Ringdale, Faringdon, Berks, **La Mancha Springtime**, born May, 1900.

II. (£5).—ROBERTSON AND SONS, Church Farm, Babraham, Cambridge, **La Mancha Pearl**, born 1900.

III. (£2).—C. J. CORY, J.P., Llantarnam Abbey, Monmouthshire, **Llantarnam Lill**, born April 2, 1901; s., Waterville Knight (R.D.S.H.B., 368), (E.S.H.B., 53); d., Prudence (R.D.S.H.B., 2338, vol. vi. p. 12, E.S.H.B., 224, vol. i.); s. of d., Scarrif (R.D.S.H.B., 310).

R. & H. C.—C. J. CORY, J.P., **La Mancha Amy** (E.S.H.B., 192), born April, 1900.

C.—C. J. CORY, J.P., **La Mancha Olive** (E.S.H.B., 189), born March, 1900.

DEXTER KERRY.

CLASS 102.—Bull, calved in 1899, 1900, or 1901. [7 entries.]

I. (£7) and Champion.†—The DUCHESS OF DEVONSHIRE, Compton Place, Eastbourne, black, **Compton Darky**, born 1899.

* Given by B. de Bertodano, Esq., for the Best Animal in Class 99, 100, or 101—The Bertodano Challenge Cup, value 25 guineas. The Cup to become the property of an Exhibitor winning it three years in succession.

† Given by B. de Bertodano, Esq., for the Best Animal in Class 102, 103, or 104—The Bertodano Challenge Cup, value 25 guineas. The Cup to become the property of an Exhibitor winning it three years in succession.

II. (£5.)—G. HARGOOD, Harley Lodge, Wimborne, Dorset, black, **De Wet**, born October 3, 1899, bred by the late W. H. S. Hogg, Oakleigh, Pembury, Tunbridge Wells; s., Othello 2nd (108, vol. iii. p. 47, R.D.S.); d., Lady Bird (2921, R.D.S., vol. iv. p. 36).

III. (£2.)—ROBERTSON AND SONS, Church Farm, Babraham, Cambridge, black, **La Mancha Boss**, born 1900.

R. & H. C.—The DUCHESS OF DEVONSHIRE, red, **Compton Dandy**, born 1900.

H. C.—B. DE BERTODANO, Cowbridge House, Malmesbury, Wilts, black, **Cowbridge Jock**, born April 11, 1901; s., La Mancha Still (79, E. D. & K.H.B.); d., Upminster Dainty Dish (246, E.D. & K.H.B.);—and W. J. FLETCHER, The Chantry, Wimborne, Dorset, black, **Chantry Bob** (172, E.H.B.), born March 12, 1901, bred by — Woodiwiss, Upminster, Essex; s., Red Marley (91); d., Up Black Rose (396); s. of d., La Mancha Torn Thumb (81).

CLASS 103.—Dexter Kerry Cow or Heifer, in-Milk, calved in or before 1899. [9 entries.]

I. (£7) and R. for Champion.*—The DUCHESS OF DEVONSHIRE, Compton Place, Eastbourne, black, **Compton Dot**, born 1897.

II. (£5.)—B. DE BERTODANO, Cowbridge House, Malmesbury, Wilts, black, **Upminster Waif**, born 1897.

III. (£2.)—B. DE BERTODANO, black, **Cowbridge Love Lost**, born March, 1897.

R. & H. C.—ROBERTSON AND SONS, Church Farm, Babraham, Cambridge, black, **La Mancha Violet** (Aicine Cuffe), born 1899.

H. C.—The DUCHESS OF DEVONSHIRE, red, **Upminster Red Skin**, born 1898:—and W. STALLARD, Sunny Lodge, Malvern Link, black, **Malvern Signorina**, born January 26, 1896; s., Honeybourne (135); d., Malvern Signora (980); s. of d., No. 46, Ballyornane Herd (112).

C.—W. J. FLETCHER, The Chantry, Wimborne, Dorset, black, **Chantry Belle**, born December 10, 1897; s., Chantry Dick (265, J.H.B.); d., Chantry Jane (831, Irish H.B.); s. of d., Prop (219).

CLASS 104.—Dexter Kerry Heifer, calved in 1900 or 1901. [8 entries.]

I. (£7.)—The DUCHESS OF DEVONSHIRE, Compton Place, Eastbourne, black, **Compton Dumpling**, born 1900.

II. (£5.)—ROBERTSON AND SONS, Church Farm, Babraham, Cambridge, black, **La Mancha Jess**, born, 1900.

III. (£2.)—H. M. GIBBS, Barrow Court, Flax Bourton, near Bristol, black, **Barrow Nest Egg**, born March 4, 1900, bred by — Robertson, Babraham, Cambridge.

R. & H. C.—The DUCHESS OF DEVONSHIRE, black, **Compton Dimple**, born 1901.

* Given by B. de Bertodano, Esq., for the Best Animal in Class 102, 103, or 104.—The Bertodano Challenge Cup, value 25 guineas. The Cup to become the property of an Exhibitor winning it three years in succession.

H. C.—**B. DE BERTODANO**, Cowbridge House, Malmesbury, Wilts, red, **La Mancha Gem**, born 1900:—and **ROBERTSON AND SONS**, black, **La Mancha Goody Two Shoes**, born 1900.

C.—**H. M. GIBBS**, black, **Barrow Daisy**, born April, 1901:—and **W. STALLARD**, Sunny Lodge, Malvern Link, black, **Malvern Style**, born September 4, 1900; s., Malvern Satrap; d., Malvern Smart (983); s. of d., Honeyborne (135).

DAIRY.

CLASS 105.—*Cow, in-Milk, of any breed or cross, under 900 lbs. live weight, yielding the largest quantity of milk, of normal character, containing, on the average of the two competitive milkings, 12 per cent. of total solids, of which not less than 3·25 per cent. shall be fat, the period of lactation being taken into consideration.*

I. (£10.)—**Dr. H. WATNEY**, Buckhold, Pangbourne, fawn Jersey, **Marryatts Lass**, born November 5, 1893, bred by P. J. Bree, Grouville, Jersey; s., Villo (4437); d., La Lentes Marionettes II.

II. (£8.)—**G. W. HORSWELL**, North Hill Dairy, Plymouth, yellow and white Guernsey, **White Socks**.

III. (£2.)—**Sir T. V. S. GOOCH**, Bart., Benacre Hall, Wrentham, Suffolk, whole, **Wild Rose**, born May 12, 1899, bred by T. Loader Brown; s., Rattler (6030); d., Moss Rose (vol. ix. p. 295); s. of d., Pilot (5698).

CLASS 106.—*Cow, in-Milk, of any breed or cross, 900 lbs. live weight or over, yielding the largest quantity of milk, of normal character, containing, on the average of the two competitive milkings, 12 per cent. of total solids, of which not less than 3·25 per cent. shall be fat, the period of lactation being taken into consideration.*

I. (£10.)—**J. EVENS**, Burton, near Lincoln, Lincoln red Shorthorn, **Burton Ruby Spot**, born September 10, 1896; s., Professor (200); d., Red E.; s. of d., Hag (134).

II. (£8.)—**H. CUNDY**, 54, Wilton Street, Stoke, Devonport, red South Devon, **Favourite**.

III. (£2.)—**Dr. H. WATNEY**, Buckhold, Pangbourne, grey Jersey, **Red Maple**, born July 14, 1896; s., Savoy (5720); d., Golden Maple.

CLASS 107.—*South Devon Cow, in-Milk, yielding the largest quantity of milk of normal character, containing, on the average of the two competitive milkings, 12 per cent. of total solids, of which not less than 3·25 per cent. shall be fat, the period of lactation being taken into consideration.*

(The Prizes in Classes 107 and 108 were offered by the Earl of Mount Edgcumbe, and Exhibits must have been the property of a bona fide tenant farmer, residing in Devon or Cornwall.)

I. (£10.)—**R. CUNDY AND SONS**, The Royal Dairy, Devonport, **Dairy Maid**.

CLASS 108.—*Cow, in-Milk, of any breed or cross, except South Devon, yielding the largest quantity of milk of normal character, containing, on the average of the two competitive milkings, 12 per cent. of total solids, of which not less than 3·25 per cent. shall be fat, the period of lactation being taken into consideration.—£10.*

[No Entry.]

BUTTER TEST.

(The Prizes in Classes 109 and 110 were given by the English Jersey Cattle Society, and Entries in them were subject to any conditions issued by that Society previous to the Tests.)

CLASS 109.—*Cow, of any breed or cross, under 900 lbs. live weight, obtaining the greatest number of points by the practical test of the Separator and Churn, judged by the scale of points adopted by the English Jersey Cattle Society.*

I. (£10) and Silver Medal.*—Dr. H. WATNEY, Buckhold, Pangbourne, fawn Jersey, **Marryatts Lass**, born November 5, 1893, bred by P. J. Bree, Grouville, Jersey; s., Villo (4437); d., La Lentes Marionettes II.

II. (£3) and Bronze Medal.*—Sir T. V. S. GOOCH, Bart., Benacre Hall, Wrentham, Suffolk, whole, **Wild Rose**, born May 12, 1899, bred by T. Loader Brown; s., Rattler (6030); d., Moss Rose (vol. ix. p. 295); s. of d., Pilot (5698).

III. (£2).—E. SMITH, Newton Farm, Bromsgrove, fawn Jersey, **Neatness** (8733, F.S.C.), born March 24, 1898, bred by J. Nicolle, Jersey.

Certificate of Merit.—Mrs. R. L. BROWN, Hallfield, Chard, fawn, **Remember**, born July 30, 1897, bred by L. Lelucu, Grouville, Jersey; s., Caumais Lad (2257); d., Miranda (6363):—and Dr. H. WATNEY, fawn Jersey, **Marryatts Lassie**, born February 2, 1898; s., Squire Jack; d., Marryatts Lass.

CLASS 110.—*Cow, of any breed or cross, 900 lbs. live weight and over, obtaining the greatest number of points by the practical test of the Separator and Churn, judged by the scale of points adopted by the English Jersey Cattle Society.*

I. (£10) Gold Medal and Special (£1).*—Dr. H. WATNEY, Buckhold, Pangbourne, grey Jersey, **Red Maple**, born July 14, 1896; s., Savoy (5720); d., Golden Maple.

II. (£3).—J. EVENS, Burton, near Lincoln, Lincoln red Shorthorn, **Burton Ruby Spot**, born September 10, 1896; s. Professor (200); d., Red E.; s. of d., Hag (134).

CLASS 111.—*English-bred Cow or Heifer, entered in the English Guernsey Cattle Society's Herd Book, or eligible for entry therein, obtaining the greatest number of points by the practical Test of the Churn, the points to be reckoned on the weight of Butter and an allowance for lactation to be made under the scale settled by the English Guernsey Society. [7 entries.]*

(The Prizes in Class 111 were given by the English Guernsey Cattle Society.)

I. (Silver Cup).—E. A. HAMBRO, Hayes Place, Hayes, Kent, red, **Hayes Rosie**, born December 15, 1895, bred by T. Andoire, Alderney; s., Jumbro; d., Flower.

* Gold, Silver, and Bronze Medals were given for the three Jersey Cows, entered or eligible for entry in the English Jersey Herd Book, obtaining the greatest number of points in the test.

† Special Prize given for the Best quality of Butter produced by any Jersey Cow awarded a Medal, Prize, or Certificate of Merit in Class 109 or 110.

Prizes awarded to Cotswold & Devon Long-Woolled Sheep. xxxix

II. (Silver Medal and £1.)—Mrs. FOWNES, The Manor House, Weston Bampfylde, Sparkford, Somerset, lemon fawn, **Princess Rhea**, born December 26, 1895, bred by — Davey, St. Peter's Port, Guernsey; s., Alexander the Great (706); d., Rhea V. (1996).

III. (Bronze Medal and £1.)*—E. A. HAMBO, dark fawn and white, **Express**, born March 26, 1895, bred by — Robin, Elibots, St. Peter's Port, Guernsey; s., Rydale 4th (865, P.S.); d., Lively of the Frouillitts (1961, F.S.).

SHEEP.

COTSWOLD.

CLASS 112.—*Shearling Ram.* [4 entries.]

I. (£10.)—W. HOULTON, Broadfield Farm, Northleach, R.S.O., born February, 1901.

II. (£5.)—R. SWANWICK, The Royal Agricultural College Farm, Cirencester.

R.—W. HOULTON, born February, 1901.

H. C.—R. SWANWICK.

CLASS 113.—*Pair of Cotswold Ram Lambs, dropped in 1902.*
[1 entry.]

I. (£10.)—R. SWANWICK, The Royal Agricultural College Farm, Cirencester.

CLASS 114.—*Pen of Three Cotswold Shearling Ewes.* [2 entries.]

I. (£10.)—W. HOULTON, Broadfield Farm, Northleach, R.S.O., born February, 1901.

R.—R. HOULTON, born February, 1901.

DEVON LONG-WOOLLED.

CLASS 115.—*Devon Long-Woolled Shearling Ram.* [9 entries.]

I. (£10.)—F. WHITE, Torweston, Williton, born February, 1901.

II. (£5.)—H. E. THORNE, Curdon, Williton, Somerset, **Premier**, born February, 1901.

III. (£2.)—H. E. THORNE, **Squire Fred 1st**, born March 1, 1901.

R.—F. WHITE, born February, 1901.

V. H. C.—F. WHITE, born February, 1901.

C.—H. E. THORNE, **Cardiff Advocate**, born February 26, 1901.

* Gold, Silver, and Bronze Medals were given for the three Jersey Cows, entered or eligible for entry in the English Jersey Herd Book, obtaining the greatest number of points in the test.

CLASS 116.—*Pair of Devon Long-Woolled Ram Lambs, dropped in 1902.* [6 entries.]

- I. (£10.)**—FREDERICK WHITE, Torweston, Williton, born January.
- II. (£5.)**—FREDERICK WHITE, born February.
- III. (£2.)**—FREDERICK WHITE, born February.
- R.**—W. BRENT, Clampit, Callington, born February.
- H. C.**—T. HITT, Langford Court, Cullompton, born January 21 and 31.
- C.**—W. BRENT, born February.

CLASS 117.—*Pen of Three Devon Long-Woolled Shearling Ewes.* [3 entries.]

- I. (£10.)**—F. WHITE, Torweston, Williton, born February, 1901.
- II. (£5.)**—F. WHITE, born February, 1901.
- R.**—F. WHITE, born February, 1901.

SOUTH DEVON.

CLASS 118.—*South Devon Shearling Ram.* [10 entries.]

- I. (£10.)**—H. FAIRWEATHER, Malston, Sherford, Kingsbridge, born February, 1901.
- II. (£5.)**—W. F. SOBEY, Tenant, Menheniot, born February 22, 1901.
- III. (£2.)**—J. S. HALLETT, Sherford, Brixton, Plymouth, born February, 1901.
- R.**—J. S. HALLETT, born February, 1901.
- H. C.**—J. S. HALLETT, born February, 1901.
- C.**—W. F. SOBEY, born February 22, 1901.

CLASS 119.—*Pair of South Devon Ram Lambs, dropped in 1902.* [6 entries.]

- I. (£10.)**—J. S. HALLETT, Sherford, Brixton, Plymouth, born February.
- II. (£5.)**—J. S. HALLETT, born February.
- III. (£2.)**—W. F. SOBEY, Tenant, Menheniot, born February 23.
- R.**—J. S. HALLETT, born February.

CLASS 120.—*Pen of Three South Devon Shearling Ewes.* [5 entries.]

- I. (£10.)**—H. FAIRWEATHER, Malston, Sherford, Kingsbridge, born February, 1901.
- II. (£5.)**—H. FAIRWEATHER, born February, 1901.
- R.**—T. S. WALTERS, Coleridge, Chillington, Kingsbridge, born February, 1901.

SOUTHDOWN.

CLASS 121.—*Southdown Shearling Ram.* [9 entries.]

I. (£10) and Special.*—C. ADEANE, Babraham Hall, Cambridge, born about February 1, 1901.

II. (£5.)—C. ADEANE, born about February 1, 1901.

III. (£2.)—Col. A. F. WALTER, Bearwood, Wokingham, born February, 1901.

R.—E. ELLIS, Summersbury Hall, Shalford, near Guildford, born February 14, 1901.

C.—Col. H. McCALMONT, C.B., M.P., Cheveley Park, Newmarket, born February 10, 1901 :—and Col. A. F. Walter, born February, 1901.

CLASS 122.—*Pair of Southdown Ram Lambs, dropped in 1902.*

[6 entries.]

I. (£10.)—Col. H. McCALMONT, C.B., M.P., Cheveley Park, Newmarket, born February 5.

II. (£5.)—C. ADEANE, Babraham Hall, Cambridge, born about February 1.

III. (£2.)—Col. H. McCALMONT, C.B., M.P., born February 5.

R.—Col. A. F. WALTER, Bearwood, Wokingham, born February 3 and 4.

C.—E. ELLIS, Summersbury Hall, Shalford, Surrey, born about February 14.

CLASS 123.—*Pen of Three Southdown Shearling Ewes.*

[4 entries.]

I. (£10) and Special.†—Col. H. McCALMONT, C.B., M.P., Cheveley Park, Newmarket, born February 1, 1901.

II. (£5.)—J. COLMAN, Gatton Park, Surrey, born February, 1901.

R.—Col. A. F. WALTER, Bearwood, Wokingham, born February, 1901.

C.—E. ELLIS, Summersbury Hall, Shalford, Surrey, born February 14, 1901.

HAMPSHIRE DOWN.

CLASS 124.—*Hampshire Down Shearling Ram.* [6 entries.]

I. (£10.)—C. COLES, Manor House, Winterbourne Stoke, Salisbury, born January 20, 1901.

II. (£5.)—J. FLOWER, Chilmark, Salisbury, aged 1 y., 4 m., 2 w.

III. (£2.)—J. FLOWER, aged 1 y., 4 m., 1 w.

H. C.—J. JOYCE, Milverton, Somerset, born February, 1901.

* Given by the Southdown Sheep Society, under Conditions No. 65, stated in Prize Schedule, a Silver Medal for the Best Ram or Ram Lamb in Class 121 or 122.

† Given by the Southdown Sheep Society, under Conditions No. 65, stated in Prize Schedule, a Silver Medal for the Best Pen of Ewes in Class 123.

C.—**LORD ROTHSCHILD**, Tring Park, Tring, Herts, born about January 10, 1901.

CLASS 125.—*Pair of Hampshire Down Ram Lambs, dropped in 1902.*
[7 entries.]

I. (£10.)—**J. FLOWER**, Chilmark, Salisbury.

II. (£5.)—**C. COLES**, Manor House, Winterbourne Stoke, Salisbury, born January 20.

III. (£2.)—**J. FLOWER**.

H. C.—**J. JOYCE**, Milverton, Somerset, born January 25:—and **LORD ROTHSCHILD**, Tring Park, Tring, Herts, born about January 10.

C.—**LORD ROTHSCHILD**, born about January 10.

CLASS 126.—*Pen of Three Hampshire Down Shearling Ewes.*
[3 entries.]

I. (£10.)—**J. FLOWER**, Chilmark, Salisbury, aged 1 y., 4 m., 2 w.

II. (£5.)—**J. FLOWER**, aged 1 y., 4 m., 2 w.

SHROPSHIRE.

CLASS 127.—*Shropshire Shearling Ram.* [12 entries.]

I. (£10.)—**R. P. COOPER**, Shenstone Court, and Ashlyns, Berkhamstead, born March 15, 1901.

II. (£5.)—**W. F. INGE**, Thorpe Hall, Tamworth, born February or March, 1901.

III. (£2.)—**R. P. COOPER**, born March 15, 1901.

R.—**E. NOCK**, Sutton Maddock, Shifnal, Salop, born the 3rd week of February, 1901.

H. C.—**T. FENN**, Stonebrook House, Ludlow, born about March 15, 1900:—and **W. F. INGE**, born February or March, 1901.

C.—**T. FENN**, born about March 15, 1900:—and **E. NOCK**, born the 3rd week of February, 1901.

CLASS 128.—*Pair of Shropshire Ram Lambs, dropped in 1902.*
[4 entries.]

I. (£10.)—**R. P. COOPER**, Shenstone Court and Ashlyns, Berkhamstead, born about the middle of February.

II. (£5.)—**E. NOCK**, Sutton Maddock, Shifnal, Salop, born 2nd week in February.

CLASS 129.—*Pen of Three Shropshire Shearling Ewes.* [6 entries.]

I. (£10.)—**W. F. INGE**, Thorpe Hall, Tamworth, born February or March, 1901.

II. (£5.)—**R. P. COOPER**, Shenstone Court and Ashlyns, Berkhamstead, born about the middle of March, 1901.

III. (£2.)—**T. FENN**, Stonebrook House, Ludlow, born about March 15, 1901.

Prizes awarded to Oxford Down and Exmoor Sheep. xliii

R.—E. Nock, Sutton Maddock, Shifnal, Salop, born 2nd week of February, 1901.

H. C.—R. P. COOPER, born about the middle of March, 1901.

OXFORD DOWN.

CLASS 130.—*Oxford Down Shearling Ram.* [8 entries.]

I. (£10.)—J. T. HOBBS, Maisey Hampton, Fairford, Gloucestershire.

II. (£5.)—R. W. HOBBS, Kelmscott, Lechlade, born about January 24, 1901.

III. (£2.)—A. BRASSEY, M.P., Heythrop Park, Chipping Norton, born January 3 or 4, 1901.

R. & V. H. C.—J. T. HOBBS.

CLASS 131.—*Pair of Oxford Down Ram Lambs, dropped in 1902.*
[7 entries.]

I. (£10.)—A. BRASSEY, M.P., Heythrop Park, Chipping Norton, born January 5.

II. (£5.)—J. T. HOBBS, Maisey Hampton, Fairford, Gloucestershire, born January.

III. (£2.)—R. W. HOBBS, Kelmscott, Lechlade, born about January 24.

R. & V. H. C.—J. T. HOBBS, born January.

H. C.—W. A. TREWEEKE, Ryne Hill, Chipping Norton, born January 21.

CLASS 132.—*Pen of Three Oxford Down Shearling Ewes.* [6 entries.]

I. (£10.)—A. BRASSEY, M.P., Heythrop Park, Chipping Norton, born January 3 and 4, 1901.

II. (£5.)—J. T. HOBBS, Maisey Hampton, Fairford, Gloucestershire.

III. (£2.)—R. W. HOBBS, Kelmscott, Lechlade, born about January 24, 1901.

R. & V. H. C.—W. A. TREWEEKE, Ryne Hill, Chipping Norton, born about end of February, 1901.

EXMOOR.

CLASS 133.—*Exmoor Shearling Ram.* [4 entries.]

I. (£10.)—C. N. SKINNER, Hawkhurst, Bridgwater, born March 25, 1901.

II. (£5.)—C. N. SKINNER, born April 2, 1901.

R.—C. N. SKINNER, born March 28, 1901.

CLASS 134.—*Pair of Exmoor Ram Lambs, dropped in 1902.*
[4 entries.]

I. (£10.)—C. N. SKINNER, Hawkhurst, Bridgwater, born March 30.

II. (£5.)—C. N. SKINNER, born March 27.

R.—C. N. SKINNER, born April 3.

xliv *Prizes awarded to Somerset and Dorset Horned Sheep.*

CLASS 135.—Pen of Three Exmoor Shearling Ewes. [4 entries.]

I. (£10).—C. N. SKINNER, Hawkhurst, Bridgwater, born March 25, 1901.

II. (£5).—J. HOWARD, Chittlehampton, Umberleigh, R.S.O.

R.—C. N. SKINNER, born March 25, 1901.

H. C.—C. N. SKINNER, born April 2, 1901.

DARTMOOR.

CLASS 136.—Dartmoor Shearling Ram. [8 entries.]

I. (£10) and Special (£5 5s.).*—E. P. NORTHEY, Higher Bowden, Okehampton, born March, 1901.

II. (£5).—E. P. NORTHEY, born March, 1901.

III. (£2).—J. R. T. KINGWELL, J.P., Great Aish, South Brent, born about March 1, 1901.

R.—E. P. NORTHEY, born March, 1901.

CLASS 137.—Pair of Dartmoor Ram Lambs, dropped in 1902. [7 entries.]

I. (£10).—J. R. T. KINGWELL, J.P., Great Aish, South Brent, born about February 21.

II. (£5).—J. R. T. KINGWELL, J.P., born about February 1.

III. (£2).—W. ROWSE, Town Mills, Okehampton, born February 16.

R.—J. R. T. KINGWELL, J.P., born March 9 and 14.

CLASS 138.—Pen of Three Dartmoor Shearling Ewes. [6 entries.]

I. (£10).—J. R. T. KINGWELL, J.P., Great Aish, South Brent, born about March 14, 1901.

II. (£5).—W. ROWSE, Town Mills, Okehampton, born February, 1901.

III. (£2).—J. R. T. KINGWELL, J.P., born about March 1, 1901.

R.—WARD and CHOWEN, Burnville, Tavistock, born March 15, 1901.

SOMERSET AND DORSET HORNED.

CLASS 139.—Somerset and Dorset Horned Shearling Ram. [2 entries.]

I. (£5).—F. J. MERSON, Farrington, North Petherton, Bridgwater, born December, 1900.

R.—W. J. CULVERWELL, Durleigh Farm, Bridgwater, born December 20, 1900, bred by E. T. Culverwell, Durleigh, Bridgwater.

* Given by R. Bayly, Esq., for the Best Ram or Pen of Ewes in Classes 136 to 138.

**CLASS 140.—Pair of Somerset and Dorset Horned Ram Lambs,
dropped after November 1st, 1901. [3 entries.]**

I. (£5.)—W. R. FLOWER, West Stafford, Dorchester, **Flower's No. 91** and **92**, born December 10, 1901.

II. (£3.)—W. R. FLOWER, **Flower's No. 93** and **94**, born December 10, 1901.

R.—F. J. MERSON, Farringdon, North Petherton, Bridgwater, born 1st week in December, 1901.

**CLASS 141.—Pen of Three Somerset and Dorset Horned Shearling Ewes.
[4 entries.]**

I. (£5.)—W. R. FLOWER, West Stafford, Dorchester, born December 12, 1900.

II. (£3.)—F. J. MERSON, Farringdon, North Petherton, Bridgwater, born December, 1900.

R.—W. R. FLOWER, born December 12, 1900.

H. C.—W. J. CULVERWELL, Durleigh Farm, Bridgwater, born December 20, 1900, bred by E. T. Culverwell.

**CLASS 142.—Pen of Three Somerset and Dorset Horned Ewe Lambs.
[4 entries.]**

(The Prizes in Class 142 were given by W. R. Flower, Esq.)

I. (£10.)—W. R. FLOWER, West Stafford, Dorchester, born December 10, 1901.

II. (£3.)—W. R. FLOWER, born December 10, 1901.

R.—F. J. MERSON, Farringdon, North Petherton, Bridgwater, born December, 1901.

PIGS.

BERKSHIRE.

**CLASS 143.—Berkshire Boar, farrowed in 1899, 1900, or 1901.
[6 entries.]**

I. (£7) and **R.** for Special.*—R. W. HUDSON, Danesfield, Marlow, Bucks, **Danesfield Warrior**, born January 9, 1901; s., **Manor Favourite** (7831); d., **Poetess 1st** (6319); s. of d., **Teufel** (5420).

II. (£3.)—R. W. HUDSON, **Danesfield Commons**, born June 5, 1900, bred by J. A. Fricker, Burton, Mere, Wilts; s., **Faithful Commons** (6640); d., **Bright 12th** (6872); s. of d., **Highmere** (4750).

* Given by the British Berkshire Society for the Best Pig in the Berkshire Classes entered in, or eligible for, the Herd Book.

III. (£2).—The **EARL OF CARNARVON**, Highclere Castle, Newbury, Hall Mark G. (7900), born March 1, 1900, bred by E. Hayter, Whitchurch, Hants; s., Pastmaster (7108); d., Chic (7115); s. of d., Stratton Teddy (5860).

R. & H. C.—J. LAWRENCE, Stall Pitts's Farm, Shrivenham, Llangibby Sultan (7538), born January 2, 1899; s., Loyal Berks (6391); d., Lone Star (6392); s. of d., Lucky Star (5888).

H. C.—J. A. FRICKER, Burton, Mere, Wilts, born January 2, 1901; s., Faithful Commons; d., Bright 13th; s. of d., First Catch F.

CLASS 144.—Pair of Berkshire Boars, farrowed in 1902.

[4 entries.]

I. (£5).—R. W. HUDSON, Danesfield, Marlow, Bucks, born January 2; s., Danesfield Loyal; d., Danesfield Mill (7316); s. of d., Highclere Haymaker (6275).

II. (£2).—J. A. FRICKER, Burton, Mere, Wilts, born January 1.

R. & H. C.—A. HISCOCK, jun., Manor Farm, Motcombe, Dorset, born January 5; s., First Rank F. (7422); d., Manor First Choice 12th (H. 7710).

H. C.—The **EARL OF CARNARVON**, Highclere Castle, Newbury, born January 24; s., Handy Man (vol. xviii.); d., Highclere 62nd (vol. xviii.); s. of d., Drogheda (6923).

CLASS 145.—Berkshire Breeding Sows, farrowed before 1902.

[7 entries.]

I. (£7) and Special (£5).*—HOB. CLAUD B. FORTMAN, Childe-Okeford, Blandford, Dorset, Ethel (7105), born March 2, 1898, bred by N. Benjafield, Short's Green Farm, Motcombe, Dorset; s., Letcombe Lord (5423); d., Maudie (6059); s. of d., Marmaduke (4059).

II. (£3).—R. W. HUDSON, Danesfield, Marlow, Bucks, Danesfield Mistress (7837), born September 13, 1900; s., Drogheda (6923); d., Danesfield Huntress (7313); s. of d., Dagwell (7118).

III. (£2).—J. A. FRICKER, Burton, Mere, Wilts, Flawless Form F., born November 19, 1900; s., Faithful Commons; d., Square Form F.

R. & H. C.—A. HISCOCK, jun., Manor Farm, Motcombe, Dorset, Manor Molly, born March 3, 1902; s., First Rank F. (7422); d., Manor Choicest (8037).

C.—R. W. HUDSON, Danesfield Huntress (7313), born January 8, 1899, bred by E. Hayter, Whitchurch; d., Huntress (7306); s. of d., Sir Visto (6789);—and E. J. MORANT, Dilton, Boldre, Lymington, Hants, Lady Somerset, born December 30, 1899; s., Ace of Trumps; d., Lady Somerset; s. of d., Letcombe, ex Wincanton.

CLASS 146.—Pair of Berkshire Breeding Sows, farrowed in 1902.

[5 entries.]

I. (£5).—R. W. HUDSON, Danesfield, Marlow, Bucks, born January 6; s., Danesfield Loyal; d., Danesfield Vain Maid (7308); s. of d., Swansea (3751).

* Given by the British Berkshire Society for the Best Pig in the Berkshire Classes entered in, or eligible for, the Herd Book.

II. (£2.)—A. HISCOCK, jun., Manor Farm, Motcombe, Dorset, born January 5; s., First Rank F. (5422); d., First Choice 12th H. (7710).

R. & H. C.—J. A. FRICKER, Burton, Mere, Wilts, born January 1.

H. C.—The EARL OF CARNARVON, Highclere Castle, Newbury, born January 10; s., Handy Man (8190); d., Favourite Rosebud (7929); s. of d., Letcombe Lord (5423).

LARGE BLACK.

(£20 of the amount given in Prizes in Classes 147 to 150 was contributed by the Large Black Pig Society.)

CLASS 147.—Large Black Boar, farrowed in 1899, 1900, or 1901.
[6 entries.]

I. (£7.)—JAMES FRAYNE, Piper's Pool, Egloskerry, R.S.O., Lord Roberts 2nd (553, vol. iv.), born April 27, 1901, bred by E. Smith, Launceston; s., Lord Roberts 1st (223, vol. ii.); d., Nancy 1st (352, vol. i.); s. of d., Big Ben 1st (27, vol. i.).

II. (£3.)—JOHN FRAYN, S. Stephens, Launceston, Cornwall, Black King (545), born May 25, 1901, bred by Bastard and Sons, S. Tudy, Cornwall; s., Tinten Happy Boy (139); d., Tinten Black Bess (528); s. of d., Stephen's Nemro.

III. (£2.)—J. H. GLOVER, Cornwood Inn, Cornwood, Devon, Cornwood Squire, born September 10, 1901, bred by R. H. Ward, Menna House, Grampound Road, Cornwall; s., Tinten Squire; d., Model 2nd.

R.—W. WILLS, Caseley, Lustleigh, Lustleigh Boy (287), born April 16, 1900; s., Caseley Longsides (217); d., Susan 1st (504).

CLASS 148.—Pair of Large Black Boars, farrowed in 1902.
[6 entries.]

I. (£5.)—E. GIMBLETT, Church Town, Davidstow, Camelford, Cornwall, born February 1; s., General Buller (327); d., Susy 2nd (1254); s. of d., Halwill Jumbo.

II. (£2.)—J. WAKEHAM, Lambside, Newton Ferrers, born March 1; s., Jumbo 2nd (505); d., Sally (2014).

III. (£1.)—J. WAKEHAM, born March 1; s., Jumbo 2nd (505); d., Sally (2014).

R.—T. MARSHALL, Coombe, Plympton, born January 26; s., Tideford Longsides (135); d., Coombe Beauty 1st (1530).

CLASS 149.—Large Black Breeding Sow, farrowed before 1902.
[4 entries.]

I. (£7.)—E. GIMBLETT, Church Town, Davidstow, Camelford, Susy 1, born April 1, 1898, bred by J. Richards, Beaworthy, Devon; s., Tideford Longsides (135); d., Halwill Kate (254).

II. (£3.)—J. H. GLOVER, Cornwood Inn, Cornwood, Devon, Cornwood Lass 1st (1536, vol. iii.); s., Happy Jack 2nd; d., Queen of the Styte (1534, vol. iii.).

R.—F. ALLIN, Halwill, Beaworthy, Devon, **Halwill Duchess** (984), born October 25, 1899, bred by R. S. Oliver, Trescowe, Par Station, Cornwall; s., Cornishman (53); d., Trescowe Jet (564).

H. C.—W. WILLS, Caseley, Lustleigh, **Susannah 3rd**, born May 12, 1900; s., Caseley Longsides (217); d., Susanna (508).

CLASS 150.—*Pair of Large Black Breeding Sows, farrowed in 1902.*

First Prize, £5—second, £2—third, £1.

[1 entry.]

[No EXHIBIT.]

LARGE WHITE.

CLASS 151.—*Large White Boar, farrowed in 1899, 1900, or 1901.*

[5 entries.]

I. (£7) and Special.*—Sir G. GREENALL, Bart., Walton Hall, Warrington, **Walton What's Wanted 3rd**, born January 10, 1900; s., Walton What's Wanted 2nd (6093); d., Bryer's Beauty (8642); s. of d., Walton Topsman (3623).

II. (£3).—S. SPENCER, Holywell Manor, St. Ives, Hunts, **Holywell Hugh**, born July 17, 1899; s., Holywell Dismal Jimmy; d., Holywell Star; s. of d., Holywell Dublin.

R.—Sir G. GREENALL, Bart., **Walton Turk 3rd** (6087), born May 10, 1900; s., Walton Turk (5241); d., Walton Sarah (7502); s. of d., Long Sam (339).

CLASS 152.—*Pair of Large White Boars, farrowed in 1902.*

[4 entries.]

I. (£5).—S. SPENCER, Holywell Manor, St. Ives, Hunts, born January 2; s., Holywell Emperor Jack; d., Holywell Tabbs; s. of d., Holywell Elephant.

II. (£2).—Sir G. GREENALL, Bart., Walton Hall, Warrington, born January 1; s., Pride of Erin (vol. xviii.); d., Walton Floss (8960); s. of d., Duke of York (3471).

R.—T. MANUELL, Trevorva, Probus, Cornwall, born January 2; s., Trevorva Magistrate (6067); d., Trevorva Lady 7th (10592); s. of d., Trevorva Squire (4805).

CLASS 153.—*Large White Breeding Sow, farrowed before 1902.*

[6 entries.]

I. (£7).—Sir G. GREENALL, Bart., Walton Hall, Warrington, **Walton Topsy 5th**, born January 13, 1900; s., Walton Topsman (3623); d., Walton Belle 4th (6780); s. of d., Walton Eclipse (3621).

II. (£3).—T. MANUELL, Trevorva, Probus, Cornwall, **Trevorva Lady 7th** (10,592), born June 26, 1899; s., Trevorva Squire (4805); d., Trevorva Lady 5th (7484); s. of d., Borrowfield Prince 10th (3859).

* Given by the National Pig Breeders' Association, Silver Medals for the Best Boar and for the Best Sow of the Large White, Middle White, Small White or Tamworth Breed, exhibited in Classes 151 to 166, eligible for Entry in the Herd Book, and not having previously won the Society's Medal during 1902.

III. (£2)*—A. HISCOCK, jun., Manor Farm, Motcombe, Dorset, **Croydon Duchess**, born January 2, 1901; s., Duke of Lancaster 3rd (4321); d., Manor Favourite (8068).

R.—S. SPENCER, Holywell Manor, St. Ives, Hunts, **Holywell Czarina**, born August 10, 1898; s., Holywell Dublin; d., Holywell Princess Royal; s. of d., Holywell Grand.

H. C.—Sir G. GREENALL, Bart., **Walton Topsy 6th**, born January 13, 1900; s., Walton Topsman (3623); d., Walton Belle 4th (6780); s. of d., Walton Eclipse (3621):—and S. SPENCER, **Holywell Czarina 2nd**, born March 10, 1900; s., Holywell Elephant; d., Holywell Princess Royal; s. of d., Holywell Grand.

CLASS 154.—Pair of Large White Breeding Sows, farrowed in 1902.
[4 entries.]

I. (£5).—Sir G. GREENALL, Bart., Walton Hall, Warrington, born January 2; s., Pride of Erin (vol. xviii.); d., Walton Sarah (7502); s. of d., Long Sam (339).

II. (£2).—S. SPENCER, Holywell Manor, St. Ives, Hunts, born January 2; s., Holywell Lord George; d., Holywell Czarina 2nd; s. of d., Holywell Elephant.

R.—S. SPENCER, born January 6; s., Holywell John Day; d., Holywell Accident; s. of d., Holywell Elephant.

MIDDLE WHITE.

CLASS 155.—Middle White Boar, farrowed in 1899, 1900, or 1901.
[4 entries.]

I. (£7) and R. for Special.†—Sir G. GREENALL, Bart., Walton Hall, Warrington, **Walton John** (vol. xviii.), born March 6, 1899; s., Walton Surprise (4175); d., Walton Bridesmaid 2nd (9112); s. of d., Walton Editor (4499).

II. (£3).—Sir G. GREENALL, Bart., born January 3, 1901; s., Walton Andrew (6167); d., Walton Bridesmaid 3rd (9114); s. of d., Walton Editor (4499).

R.—A. C. TWENTYMAN, Castlecroft, near Wolverhampton, **Castlecroft Long Tom**, born December 13, 1900; s., Castlecroft Dreamer 3rd (5271); d., Castlecroft Ladysmith (9828); s. of d., Holywell (4465).

CLASS 156.—Pair of Middle White Boars, farrowed in 1902.
[4 entries.]

I. (£5).—A. HISCOCK, jun., Manor Farm, Motcombe, Dorset, born January 13; s., East Craigs Prince (5705); d., Hesketh Polly (vol. xviii.).

* This animal failed to qualify, and the Reserve No. consequently succeeded to the prize.

† Given by the National Pig Breeders' Association, Silver Medals for the Best Boar and for the Best Sow of the Large White, Middle White, Small White or Tamworth Breed, exhibited in Classes 151 to 166, eligible for Entry in the Herd Book, and not having previously won the Society's Medal during 1902.

1 *Prizes awarded to Pigs (Small White or Black Breed).*

II. (£2).—S. SPENCER, Holywell Manor, St. Ives, Hunts, born January 15; s., Holywell Count Curly; d., Holywell Victoria Countess; s. of d., Holywell Count.

R.—Sir G. GREENALL, Bart., Walton Hall, Warrington, born January 15; s., Grappenhall John (6129); d., Walton Bridesmaid VII. (10,824); s. of d., Rufford Hero (3687).

C.—S. SPENCER, born January 15; s., Holywell Count Curly; d., Holywell Victoria Countess; s. of d., Holywell Count.

CLASS 157.—Middle White Breeding Sow, farrowed before 1902.

[6 entries.]

I. (£7) and R. for Special.*—A. C. TWENTYMAN, Castlecroft, **Castlecroft Primula** (10,708), born January 16, 1900; s., Castlecroft Pretorius (5701); d., Castlecroft Peggy 2nd (9830); s. of d., Holywell (4465).

II. (£3).—S. SPENCER, Holywell Manor, St. Ives, Hunts, **Holywell Rosadora**, born January 14, 1899; s., Holywell Stumpy Tail; d., Holywell Rosy Girl; s. of d., Holywell Count.

III. (£2).—Sir G. GREENALL, Bart., Walton Hall, Warrington, **Walton Rose 11th**, born January 4, 1901; s., Walton Andrew (6167); d., Walton Rose 8th (9130); s. of d., Walton Editor (4499).

R.—Sir G. GREENALL, Bart., **Rufford Snowdrop** (9090), born July 12, 1898, bred by P. Ascroft, Rufford, near Ormskirk; s., Rufford Ploughboy (4491); d., Rufford Daisy 2nd (8346); s. of d., Rufford (1539).

H. C.—A. C. TWENTYMAN, **Castlecroft Ladysmith** (9898), born August 9, 1898; s., Holywell (4465); d., Castlecroft Lady Leicester (7590); s. of d., Morden Pure Gold (3253).

CLASS 158.—Pair of Middle White Breeding Sows, farrowed in 1902.

[4 entries.]

I. (£5).—A. HISCOCK, jun., Manor Farm, Motcombe, Dorset, born January 13; s., East Craigs Prince (5705); d., Hesketh Polly (vol. xviii., N.P.B.A.).

II. (£2).—S. SPENCER, Holywell Manor, St. Ives, Hunts, born January 15; s., Holywell Count Curly; d., Holywell Victoria Countess; s. of d., Holywell Count.

SMALL WHITE OR SMALL BLACK.

CLASS 159.—Small White or Small Black Boar, farrowed in 1899, 1900, or 1901. [5 entries.]

I. (£7).—Sir G. GREENALL, Bart., Walton Hall, Warrington, **Walton Emperor** (vol. xviii.), born January 18, 1901; s., Coleshill Royal Emperor (4521); d., Walton Jewel 4th (10,872); s. of d., Walton Robin (5337).

II. (£3).—EARL OF CARNARVON, Highclere Castle, Newbury, **Highclere Lion**, born December 24, 1900; s., Coleshill Eastbourne (4507); d., Longford Blonde (9166); s. of d., Coleshill Victor (4527).

* Given by the National Pig Breeders' Association, Silver Medals for the Best Boar and for the Best Sow of the Large White, Middle White, Small White or Tamworth Breed, exhibited in Classes 151 to 166, eligible for Entry in the Herd Book, and not having previously won the Society's Medal during 1902.

R.—Sir G. GREENALL, Bart., **Walton Champion** (vol. xviii.), born February 27, 1899; s., Temple Champion (4179); d., Coleshill Fairy (6938); s. of d., Prescott (2897).

H. C.—Hon. D. P. BOUVERIE, Coleshill House, Highworth, Wilts, **Coleshill Marquis**, born March 28, 1900, bred by Lord Amherst of Hackney, Didlington, Brandon; s., Coleshill Royal Emperor (4521); d., Sophy (9180); s. of d., Christopher (3701).

CLASS 160.—Pair of Small White or Small Black Boars, farrowed in 1902. [3 entries.]

I. (£5.)—Hon. D. P. BOUVERIE, Coleshill House, Highworth, Wilts, born January 21; s., Coleshill Marquis; d., Coleshill Grace (10,842); s. of d., Coleshill Edward (4509).

II. (£2.)—Hon. D. P. BOUVERIE, born January 2; s., Coleshill Edward 2nd; d., Coleshill Polly 2nd; s. of d., Coleshill Royal Emperor (4521).

CLASS 161.—Small White or Small Black Breeding Sow, farrowed before 1902. [4 entries.]

I. (£7.)—Hon. D. P. BOUVERIE, Coleshill House, Highworth, Wilts, **Coleshill Sunbeam 3rd**, born May 26, 1900; s., Coleshill Edward (4509); d., Coleshill Sunbeam 2nd (5458); s. of d., King William (2097).

II. (£3.)—Sir G. GREENALL, Bart., Walton Hall, Warrington, **Walton Jewel 6th** (vol. xviii.), born January 18, 1901; s., Coleshill Royal Emperor (4521); d., Walton Jewel 4th (10,872); s. of d., Walton Robin (5337).

R.—EARL OF CARNARVON, Highclere Castle, Newbury, born August 12, 1901; s., Highclere Robin (6183); d., Longford Blonde (9166); s. of d., Coleshill Victor (4527).

CLASS 162.—Pair of Small White or Small Black Breeding Sows, farrowed in 1902. [3 entries.]

I. (£5.)—Hon. D. P. BOUVERIE, Coleshill House, Highworth, Wilts, born January 2; s., Coleshill Edward 2nd; d., Coleshill Polly 2nd; s. of d., Coleshill Royal Emperor (4521).

II. (£2.)—Hon. D. P. BOUVERIE, born January 13; s., Coleshill Marquis; d., Coleshill Harbury (9162); s. of d., Metchly Toy (3275).

TAMWORTH.

CLASS 163.—Tamworth Boar, farrowed in 1899, 1900, or 1901. [3 entries.]

I. (£7.)—E. DE HAMEL, Middleton Hall, Tamworth, **Middleton Mainspring**, born January 7, 1901, bred by H. C. Stephens, Cholderton, Salisbury; s., Knowle King 3rd (4945); d., Whitacre Beauty (8526); s. of d., Warwickshire Monarch (4597).

II. (£3.)—D. W. PHILIP, The Ashes, Whitacre, Birmingham, **Whitacre Unionist**, born February 20, 1900, bred by R. Ibbotson, The Hawthorns, Knowle; s., Knowle King Bruce (5783); d., Knowle Rosy 2nd (7102); s. of d., Knowle Monarch (3781).

R.—H. C. STEPHENS, Cholderton, Salisbury, born February 20, 1901; s., Knowle King 3rd; d., Newhall Rose.t.

CLASS 164.—Pair of Tamworth Boars, farrowed in 1902.

[3 entries.]

I. (£5.)—H. C. STEPHENS, Cholderton, Salisbury, born January 5; s., Knowle King 3rd (4945); d., Whitacre Beauty (8526).

II. (£2.)—D. W. PHILIP, The Ashes, Whitacre, Birmingham, born January 10; s., Ammington Duke (5753); d., Whitacre Countess 3rd (9322); s. of d., Cliff Crystal (4923).

R.—E. DE HAMEL, Middleton Hall, Tamworth, born January 2; s., Middleton Mafeking (5799); d., Middleton Memoriam (10,976); s. of d., Middleton Molesworth (5396).

CLASS 165.—Tamworth Breeding Sow, farrowed before 1902.

[4 entries.]

I. (£7) and Special.*—H. C. STEPHENS, Cholderton, Salisbury, **Whitacre Beauty** (8526), born July 10, 1897, bred by D. W. Philip, The Ashes, Whitacre; s., Warwickshire Monarch (4597); d., Whitacre Countess 2nd; s. of d., Whitacre Chief.

II. (£2.)—D. W. PHILIP, The Ashes, Whitacre, Birmingham, **Whitacre Countess 9th**, born January 5, 1900; s., Whitacre Welshman (5411); d., Whitacre Countess 3rd (9322); s. of d., Cliff Crystal (4923).

R.—E. DE HAMEL, Middleton Hall, Tamworth, **Middleton Martenella**, born October 9, 1900; s., Middleton Mafeking (5799); d., Warwickshire Lass (6436); s. of d., Whitacre Goldfinder.

H. C.—D. W. PHILIP, **Whitacre Beauty 3rd**, born June 28, 1900; s., Whitacre Hero (5815); d., Whitacre Beauty 2nd (10,044); s. of d., Cliff Crystal (4923).

CLASS 166.—Pair of Tamworth Breeding Sows, farrowed in 1902.

[2 entries.]

I. (£5.)—D. W. PHILIP, The Ashes, Whitacre, Birmingham, born January 4; s., Ammington Duke (5753); d., Whitacre Matchless (10,050); s. of d., Whitacre Lawyer (4985).

R.—H. C. STEPHENS, Cholderton, Salisbury, born February 9; s., Knowle Forester; d., Cholderton Beauty; s. of d., Whitacre Welshman.

* Given by the National Pig Breeders' Association, Silver Medals for the Best Boar and for the Best Sow of the Large White, Middle White, Small White or Tamworth Breed, exhibited in Classes 151 to 166, eligible for Entry in the Herd Book, and not having previously won the Society's Medal during 1902.

PRODUCE.

PRIZES FOR CIDER.

(Open to Growers or Makers.)

First Prize in each Class, a Silver Medal and a Certificate ; Second Prize in each Class, a Bronze Medal and a Certificate.

Champion Prize, for Best Exhibit in any of the Classes, a Gold Medal and a Certificate.

(The Cider must have been made in 1901, and each Exhibit in Cask consisted of not less than 18 gallons.)

Cider made in Devon.

CLASS 167.—*Cask of Cider, containing not less than 4 per cent. of Alcohol.* [3 entries.]

L.—C. HAYDON.

CLASS 168.—*12 Bottles of Cider, containing not less than 4 per cent. of Alcohol.* [1 entry.]

L.—C. HAYDON.

CLASS 169.—*Cask of Cider, containing less than 4 per cent. of Alcohol.* [2 entries.]

L.—C. HAYDON.

CLASS 170.—*12 Bottles of Cider, containing less than 4 per cent. of Alcohol.* [4 entries.]

L.—C. HAYDON.

II.—J. M. CAME AND SONS.

R. & V. H. C.—BOWDEN AND COOMBE.

Cider made in Herefordshire.

CLASS 171.—*Cask of Cider, containing not less than 4 per cent. of Alcohol.* [1 entry.]
[No Award.]

CLASS 172.—*12 Bottles of Cider, containing not less than 4 per cent. of Alcohol.* [1 entry.]
[No Award.]

CLASS 173.—*Cask of Cider, containing less than 4 per cent. of Alcohol.* [1 entry.]

L.—J. BAZLEY.

CLASS 174.—12 *Bottles of Cider, containing less than 4 per cent. of Alcohol.* [4 entries.]

I.—YEOMANS BROS.

II.—J. BAZLEY.

Cider made in Somerset.

CLASS 175.—*Cask of Cider, containing not less than 4 per cent. of Alcohol.* [9 entries.]

I.—D. J. CROFTS AND SON.

II.—D. J. CROFTS AND SON.

R. & V. H. C.—H. TUCKER.

H. C.—W. T. S. TILLEY.

CLASS 176.—12 *Bottles of Cider, containing not less than 4 per cent. of Alcohol.* [12 entries.]

I. and Champion.—D. J. CROFTS AND SON.

II.—W. T. S. TILLEY.

R.—D. J. CROFTS AND SON.

V. H. C.—H. TUCKER.

H. C.—C. OSBORN AND SON :—and W. T. S. TILLEY.

C.—W. T. ALLEN :—and H. J. DAVIS.

CLASS 177.—*Cask of Cider, containing less than 4 per cent. of Alcohol.* [9 entries.]

I.—D. J. CROFTS AND SON.

II.—H. J. DAVIS.

CLASS 178.—12 *Bottles of Cider, containing less than 4 per cent. of Alcohol.* [11 entries.]

I. and R. for Champion—H. J. DAVIS.

II.—H. J. DAVIS.

H. C.—D. J. CROFTS AND SON.

Cider made in Counties other than Devon, Hereford, or Somerset.

CLASS 179.—*Cask of Cider, containing not less than 4 per cent. of Alcohol.* [1 entry.]

II.—R. ROUT AND SON.

CLASS 180.—12 *Bottles of Cider, containing not less than 4 per cent. of Alcohol.* [2 entries.]

I.—R. ROUT AND SON.

R.—R. ROUT AND SON.

CLASS 181.—*Cask of Cider, containing less than 4 per cent. of Alcohol.*
[1 entry.]

II.—A. KNIGHT.

CLASS 182.—*12 Bottles of Cider, containing less than 4 per cent. of Alcohol.* [3 entries.]

I.—H. THOMSON.

II.—A. KNIGHT.

CHEESE.

CLASS 183.—*Three Cheeses (not less than 56 lbs. each) made in 1901.*
[11 entries.]

I. (£15.)—H. TRAVERS.

II. (£10.)—A. OSBORNE.

III. (£5.)—H. WHITE.

R.—H. CANNON.

V. H. C.—J. ASHBY :—and J. SAGE.

CLASS 184.—*Three Cheddar Cheeses (not less than 28 lbs. each), made in 1901 by a Student who had received not less than a week's instruction in one of the Society's Cheese Schools held since 1898.*
[3 entries.]

I. (£8.)—Miss S. A. STEEDS.

CLASS 185.—*Three Cheeses (not less than 28 lbs. each) made in 1902.*
[10 entries.]

I. (£8.)—J. SAGE.

II. (£5.)—H. CANNON.

III. (£3.)—N. J. SIMS.

H. C.—H. TRAVERS.

C.—E. T. GREEN.

CLASS 186.—*Three Cheddar Cheeses (not less than 28 lbs. each), made in 1902 by a Student who had received not less than a week's instruction in one of the Society's Cheese Schools held since 1898.*
[2 entries.]

I.—(£8.)—Miss SAGE.

R.—Mrs. W. T. S. TILLEY.

CLASS 187.—*Eight Loaf or other Truckle Cheeses made in 1902.*
[7 entries.]

I. (£5.)—H. TRAVERS.

II. (£3.)—Mrs. C. CANDY.

III. (£2).—F. W. J. CROCKER.

R.—H. CANNON.

C.—N. J. SIMS.

CLASS 188.—*Three Caerphilly Cheeses made in 1902.* [9 entries.]

I. (£3).—MRS. W. T. S. TILLEY.

II. (£2).—MISS SPRATT.

III. (£1).—W. CHAMPION.

R.—MRS. W. T. S. TILLEY.

H. C.—H. G. HILL.

C.—E. DIBBLE.

CLASS 189.—*Three Cream or other Soft Cheeses.* [4 entries.]

I. (£3).—MRS. MCINTOSH.

II. (£2).—A. J. KINGSLEY.

R.—MISS M. G. PRIDEAUX.

BUTTER AND CREAM.

(These Classes are not open to Professional Teachers.)

CLASS 190.—*3 lbs. of Fresh (or very slightly salted) Butter, made of Cream from Cows other than Channel Island Breeds.* [21 entries.]

I. (£4).—MRS. J. H. PHILLIPS.

II. (£3).—LORD POITIMORE.

III. (£2).—MRS. L. R. MILDON.

IV. (£1).—C. HAYES.

R.—MRS. F. WARD.

H. C.—J. CHANNON :—and A. GIBBS.

C.—LLANOVER TRUSTEES :—MRS. E. DICKSON PARK : and W. S. WROTH.

CLASS 191.—*3 lbs. of Fresh (or very slightly salted) Butter, made of Cream from Cows of Channel Island Breeds only.* [17 entries.]

I. (£4).—MRS. L. R. MILDON.

II. (£3).—MRS. J. H. PHILLIPS.

III. (£2).—C. W. ARMITAGE.

IV. (£1) and Special (£1).*—A. F. SOMERVILLE.

* Three Special Prizes of £1 each were given for Butter which had the best keeping qualities, exhibited in Class 190, 191, 192, or 193. 1 lb. was taken on the first day of the Show from each Prize Lot of Butter in the Classes named, and was judged on the last day of the Show.

R.—C. E. KEYSER.

H. C.—LORD POLTIMORE :—and Mrs. F. WARD.

C.—A. GIBBS.

CLASS 192.—*3 lbs. of Fresh (or very slightly salted) Butter, made from Scalded Cream.* [23 entries.]

I. (£4.)—Mrs. F. WARD.

II. (£3) and Special (£1).*—Mrs. L. R. MILDON.

III. (£2.)—Mrs. G. PRIEST.

IV. (£1.)—C. HAYES.

R.—Miss A. OLDREIVE.

V. H. C.—LORD ROTHSCHILD.

H. C.—Mrs. J. H. PHILLIPS :—Mrs. J. H. PYLE :—Mrs. SMITH NEILL :—and A. F. SOMERVILLE.

C.—J. CHANNON :—A. GIBBS :—C. E. KEYSER :—Mrs. MCINTOSH :—Mrs. E. DICKSON PARK :—and LORD POLTIMORE.

CLASS 193.—*3 lbs. of Butter, to which no salt whatever has been added.* [21 entries.]

I. (£4.)—LORD POLTIMORE.

II. (£3) and Special (£1).*—Mrs. J. H. PHILLIPS.

III. (£2.)—LORD ROTHSCHILD.

IV. (£1.)—A. F. SOMERVILLE.

R.—Mrs. L. R. MILDON.

H. C.—A. GIBBS :—C. HAYES :—C. E. KEYSER :—LLANOVER TRUSTEES :—Mrs. MCINTOSH :—and W. S. WROTH.

C.—Mrs. SMITH NEILL.

CLASS 194.—*12 lbs. of Salted Butter, in a jar or crock, delivered to the Secretary four weeks before the Show.* [8 entries.]

I. (£4.)—J. CHANNON.

II. (£3.)—C. HAYES.

III. (£2.)—Mrs. J. T. DIBSDALL.

R.—A. F. SOMERVILLE.

CLASS 195.—*Four half-pounds of Clotted or Devonshire Cream.* [16 entries.]

I. (£3.)—Mrs. L. R. MILDON.

II. (£2.)—Mrs. F. WARD.

* Three Special Prizes of £1 each were given for Butter which had the best keeping qualities, exhibited in Class 190, 191, 192, or 193. 1 lb. was taken on the first day of the Show from each Prize Lot of Butter in the Classes named, and was judged on the last day of the Show.

III. (£1.)—A. GIBBS.

IV. (10s.)—J. and W. D. McCREATH.

R.—W. LEVERTON.

H. C.—LORD POLTIMORE.

C.—W. BEER :—and T. R. C. CUNDY.

CLASS 196.—*Four half-pounds of Scalded Milk Cream produced in Devon or Cornwall.* [7 entries.]

(The Prize in Class 196 was given by the Plymouth Local Committee.)

I. (£4.)—J. and W. D. McCREATH.

R.—Mrs. L. R. MILDON.

H. C.—J. DOLBEAR.

BUTTER-MAKING COMPETITIONS.

(No Winner of a First Prize given by this Society for Butter-making during the last three years was eligible to compete in Classes 197 to 200).

CLASS 197.—*On the first day of the Show, for Dairymaids working for wages in a dairy belonging to a tenant farmer.* [5 entries.]

I. (£4.)—Miss J. LOUGHER.

II. (£3.)—Mrs. M. COMER.

R.—Miss E. HARRIS.

CLASS 198.—*On the second day of the Show, for Men and Women (except the winner of the First Prize in Class 197) who had never won a First Prize in any open Butter-making Competition.* [11 entries.]

I. (£4.)—Miss S. HARRIS.

II. (£3.)—Miss E. EDWARDS.

III. (£2.)—Mrs. L. B. TURNER.

R.—Mrs. M. BATH.

V. H. C.—Miss E. M. LOUGHER.

H. C.—Mrs. A. HODGE :—Miss C. S. NICKELS :— and Miss L. TURNER.

CLASS 199.—*On the third day of the Show, for Men or Women (except the winners of the First Prizes in Classes 197 and 198).* [20 entries.]

I. (£4.)—Miss F. M. STUBBS.

II. (£3.)—Mrs. N. COMER.

III. (£2.)—Miss M. F. WALLATON.

IV. (£1.)—Miss E. T. ROWE.

R.—Miss A. M. M. SMITH.

H. C.—Mrs. A. HODGE:—Miss G. L. LAWRENCE:—and Mrs. L. B. TURNER.

C.—Mrs. M. BATH:—Miss E. EDWARDS:—Mrs. T. MILES:—and Miss C. S. NICKELS.

CLASS 200.—*On the fourth day of the Show, for Men and Women (except the Winners of the First Prizes in Classes 197, 198, and 199). [19 entries.]*

I. (£4.)—Miss E. T. ROWE.

II. (£3.)—Mrs. N. COMER.

III. (£2.)—Miss A. M. M. SMITH.

IV. (£1.)—Miss M. F. WALLATON.

R.—Miss E. HARRIS.

V. H. C.—Miss E. EDWARDS.

H. C.—Mrs. A. HODGE:—Miss G. L. LAWRENCE:—and Mrs. L. B. TURNER.

C.—Miss T. MILES:—and Miss L. TURNER.

CLASS 201.—*On the first day of the Show, for Students who had won a Prize at a previous Show of the Devon County Agricultural Association. (Scald Cream to be used.) [9 entries.]*

The Prizes in Classes 201 to 204 and 206 were given by the Devon County Technical Education Committee, and Competition in them was confined to Students who had obtained Certificates after having attended the Course of Instruction provided by the Travelling Butter School in the County. No Competitor could take more than one Prize in Classes 201 to 204.

I. (£3.)—Miss MABEL WOOLLACOTT.

II. (£2.)—Miss J. E. HUXHAM.

III. (£1.)—Miss E. HARRIS.

IV. (10s.)—Miss L. J. CHAVE.

R.—Miss C. S. NICKELS.

CLASS 202.—*On the second day of the Show, for Students who had not won a Prize at any previous Show of the Devon County Agricultural Association. (Raw Cream to be used.) [17 entries.]*

I. (£3.)—Miss MINNIE WOOLLACOTT.

II. (£3 10s.)—Miss L. COLE.

III. (£2.)—Miss H. M. TRENCHARD.

IV. (£1 10s.)—Miss L. TURNER.

V. (£1.)—Mrs. L. B. TURNER.

VI. (10s.)—Miss B. EWENS.

R.—Miss S. HARRIS.

H. C.—Miss E. SYMONS.

C.—Miss B. BROOKS:—Miss S. G. ROGERS:—Mrs. J. ISAAC:—and Miss E. G. BECKLY.

CLASS 203.—*On the third day of the Show, for Students who had won a Prize at a previous Show of the Devon County Agricultural Association. (Raw Cream to be used.)* [9 entries.]

I. (£3.)—Miss A. M. M. SMITH.

II. (£2.)—Miss E. HARRIS.

III. (£1.)—Miss M. MORRISH.

IV. (10s.)—Miss A. GEORGE.

R.—Miss J. E. HUXHAM.

H. C.—Miss L. J. CHAVE.

CLASS 204.—*On the fourth day of the Show, for Students who had not won a Prize at a previous Show of the Devon County Agricultural Association. (Separated Scald Cream to be used.)* [15 entries.]

I. (£3.)—Miss H. M. TRENCHARD,

II. (£2 10s.)—Mrs. L. B. TURNER.

III. (£2.)—Miss L. TURNER.

IV. (£1 10s.)—Miss L. COLE.

V. (£1.)—Miss S. HARRIS.

VI. (10s.)—Miss E. G. BECKLEY

R.—Miss E. TUCKETT.

H.C.—Miss B. PAGE.

C.—Miss J. ISSAC :—and Miss MINNIE WOOLLACOTT.

CHAMPION CLASSES.

CLASS 205.—*On the fifth day of the Show, for Winners of First and Second Prizes in the Butter-making Classes 197 to 200, or at any previous Meeting of the Society.* [13 entries.]

I. (Gold Medal.)—Miss J. LOUGHER.

II. (Silver Medal.)—Mrs. N. COMER.

III.—(Bronze Medal.)—Miss E. EDWARDS.

R.—Miss E. T. ROWE.

CLASS 206.—*On the fifth day of the Show, for First and Second Prize Winners in Classes 201, 202, 203, and 204.* [9 entries.]

I.—(Gold Medal.)—Miss E. HARRIS.

R.—Miss H. M. TRENCHARD.

MILKING COMPETITIONS.

CLASS 207.—*For Men twenty years of age and over.* [7 entries.]

I. (£1 10s.)—W. G. LITTLE.

II. (£1.)—S. HORE.

III. (15s.)—G. WINNER.

R. & H. C.—E. J. MESSA.

H. C.—H. COLMAN.

CLASS 208.—*For Women twenty years of age and over.* [5 entries.]

I. (£1 10s.)—Miss E. EDWARDS.

II. (£1.)—Miss N. COMER.

III. (15s.)—Mrs. T. MILES.

R. & H. C.—Miss M. F. WALLATON.

H. C.—Miss A. PRIEST.

CLASS 209.—*For Boys and Girls under twenty years of age.*
[4 entries.]

I. (£1 10s.)—S. W. BLATCHFORD.

II. (£1.)—Miss E. M. LOUGHER.

R.—E. MESSA.

H. C.—J. J. ROBERTS, jun.

HORSE-SHOEING COMPETITIONS.

The Registration Committee of the Farriers' Company will admit Winners of First Prizes in these Competitions to the Official Register *free of charge*, on their satisfying the Judges that they had a fair knowledge of the structure of the horse's foot, and on the necessary application being made to the Company in the prescribed form; and other Competitors, who satisfy the Judges of their competency, on payment of the usual fees. The minimum ages for Registration are: R.S.S., 25 years; Doormen, 21 years.

CLASS 210.—*On the third day of the Show, for Nag Horse Shoeing, by Smiths over twenty-five years of age, who had not previously won the First Prize in a corresponding class at one of the Society's Meetings, or a Champion Prize at any other Society's Show.* [21 entries.]

I. (£4.)—R. GRIFFITHS.

II. (£3.)—J. KERSLAKE.

III. (£2.)—D. GRIFFITHS.

IV. (£1.)—J. MALLETT.

R. & V. H. C.—W. DENNER.

H. C.—S. T. EARDLEY :—and J. FRAYN.

C.—H. J. HANNEY :—T. KERSLAKE :—and J. L. WATKINS.

CLASS 211.—*On the fourth day of the Show, for Cart Horse Shoeing, by Smiths over twenty-five years of age, who had not previously won the First Prize in a corresponding class at one of the Society's Meetings, or a Champion Prize at any other Society's Show.* [18 entries.]

I. (£4.)—J. L. WATKINS.

II. (£3.)—H. J. HANNEY.

III. (£2.)—W. H. SYMONS.

IV. (£1.)—J. FRAYN.

R. & H. C.—T. KERSLAKE.

H. C.—R. GRIFFITHS.

C.—S. T. EARDLEY :—and D. GRIFFITHS.

CLASS 212.—*On the fifth day of the Show, for Smiths under twenty-five years of age. (Competitors in this Class were required to declare their age at the time of entry, and also to state whether they wished to shoe a Nag or a Cart Horse.)* [8 entries.]

I. (£4.)—F. G. DREWETT.

II. (£3.)—H. J. HOLE.

III. (£2.)—C. F. EARL.

R. & H. C.—R. SPARROW.

C.—J. LLOYD :—and S. W. PEDRICK.

CLASS 213.—*On the fifth day of the Show, for Nag's Horse Shoeing, by previous Winners of one of the Society's First Prizes or a Champion Prize at any other Society's Show.* [5 entries.]

I. (£5.)—W. D. LANE.

R. & H. C.—T. WILLIAMS.

The Prizes in Classes 214 to 216 were given by the Devon County Technical Education Committee, and were open only to Masters or Journeymen (not Apprentices) who had passed the Examinations of the County Farriery School previous to March 31, 1902.

CLASS 214.—*For Masters or Journeymen. To Shoe a Hunter.*
[8 entries.]

I. (£3.)—G. H. HOLLOWAY.

II. (£2.)—H. KERSLAKE.

III. (£1.)—S. SYMONS.

IV. (10s.)—T. WILLIAMS.

R.—F. A. TAYLOR.

CLASS 215.—*For Masters or Journeymen. To Shoe a Hack or Harness Horse.* [12 entries.]

- I. (£3.)—J. WALDRON.
- II. (£2.)—F. A. TAYLOR.
- III. (£1.)—W. J. CAMP.
- IV. (10s.)—J. THOMAS.
- R.—L. T. VOADEN.

CLASS 216.—*For Masters or Journeymen. To Shoe an Agricultural Horse.* [14 entries.]

- I. (£3.)—P. PUDDICOMBE.
- II. (£2.)—JESSE KERSLAKE.
- III. (£1.)—A. HARRIS.
- IV. (10s.)—W. H. SYMONS.
- R.—W. GREENSLADE.

SHEEP-SHEARING.

Given by the Devon County Technical Education Committee and confined to those who had attended at least four Instruction Lessons given under the Committee in their respective districts at any time prior to the Show. The Competitions took place on the Fourth day of the Show. Each competitor had to shear two sheep without assistance in 1½ hours.

CLASS 217.—*For Agricultural Labourers over nineteen years of age.* [5 entries.]

- I. (£2 10s.)—F. LOW.
- II. (£1 10s.)—N. LOW.
- R.—B. CROOK.

CLASS 218.—*For Agricultural Labourers over sixteen, and not over nineteen years of age.* [8 entries.]

- I. (£2 10s.)—W. FORD.
- II. (£1 10s.)—G. PRESTON.
- III. (£1.)—G. LAMBLE.
- R.—J. STEVENS.

CLASS 219.—*For Farmers or Farmers' Sons, over nineteen years of age.* [6 entries.]

- I. (£2 10s.)—A. BADCOCK.
- II. (£1 10s.)—W. T. JOSLIN.
- III. (£1.)—S. BUCKINGHAM.
- R.—T. HAWKINS.
- C.—C. MEAD.

CLASS 220.—*For Farmers or Farmers' Sons, over sixteen, and not over nineteen years of age.* [3 entries.]

- I. (£2 10s.)—F. BUCKINGHAM.
- II. (£1 10s.)—P. J. R. BROOKS.

CLASS 221.—*For Boys not over sixteen years of age.* [7 entries.]

- I. (£1 10s.)—E. G. HEATH.
- II. (£1.)—W. E. BROOKS.
- III. (15s.)—G. HOWARD.
- R.—H. BALKWILL.

POULTRY.

CLASS 1.—ANY DISTINCT BREED—COCK AND FOUR HENS, BRED IN 1901 OR 1902 (THE PROPERTY OF ONE EXHIBITOR). [10 entries]

- I. (£5.)—Viscount DEERHURST, *Dorkings*.
- II. (£3.)—STANBURY BROS., *Leghorns*.
- III. (£2.)—Viscount DEERHURST, *Dorkings*.
- R.—W. BRENT, *Indian Game*.
- V. H. C.—T. FAWKES :—and P. L. A. PRICE, *Wyandottes*.
- H. C.—J. HUTCHINGS, *Old English Game*.
- C.—Miss H. BEST, *Dorkings* :—and J. R. R. MITCHELL, *Dorkings*.

CLASS 2.—COCHIN, COCK. [5 entries.]

- I. (£1 10s.)—W. COOK AND SONS.
- II. (15s.)—J. A. SLATTER.
- R.—R. J. C. LINGWOOD.
- V. H. C.—S. R. HARRIS.
- H. C.—R. J. C. LINGWOOD.

CLASS 3.—COCHIN, HEN. [2 entries.]

- I. (£1 10s.)—S. R. HARRIS.
- R.—E. PLEASANCE.

CLASS 4.—BRAHMA, COCK. [12 entries.]

- I. (£1 10s.)—G. W. HENSHALL.
- II. (15s.)—J. C. TOZER.
- III. (10s.)—A. CALDWELL.
- R.—G. W. HENSHALL.
- V. H. C.—HOSKIN BROS. :—S. W. THOMAS.
- H. C.—R. J. C. LINGWOOD.
- C.—MRS. SPERLING.

Prizes awarded for Poultry.

lxv

CLASS 5.—BRAHMA, HEN. [9 entries.]

- I. (£1 10s.)—J. A. SLATTER.
- II. (15s.)—S. W. THOMAS.
- III. (10s.)—J. C. TOZER.
- R.—A. CALDWELL.
- V. H. C.—MRS. SPERLING :—J. C. TOZER.
- H. C.—G. W. HENSHALL.
- C.—W. H. WORRALL.

CLASS 6.—LANGSHAN, COCK. [10 entries.]

- I. (£1 10s.)—G. FIELDER.
- II. (15s.)—F. C. GRIFFIN.
- III. (10s.)—T. C. GINGER.
- R.—H. WALLIS.

CLASS 7.—LANGSHAN, HEN. [8 entries.]

- I. (£1 10s.)—G. FIELDER.
- II. (15s.)—S. CLIMAS.
- III. (10s.)—HOLLAND AND HAMILTON.
- R.—F. C. GRIFFIN.
- H. C.—Dr. F. R. HARRIS.
- C.—T. C. GINGER.

CLASS 8.—PLYMOUTH ROCK, COCK. [6 entries.]

- I. (£1 10s.)—J. COOMS.
- II. (15s.)—A. and A. G. RICH.
- III. (10s.)—F. PORTER.
- R.—W. COOK AND SONS.

CLASS 9.—PLYMOUTH ROCK, HEN. [4 entries.]

- I. (£1 10s.)—T. S. MAY.
- II. (15s.)—A. and A. G. RICH.
- R.—MRS. MOGER.
- C.—W. T. MICHAEL.

CLASS 10.—WYANDOTTE, COCK. [13 entries.]

- I. (£1 10s.)—H. PICKLES.
- II. (15s.)—J. C. LAMACRAFT.
- III. (10s.)—T. FAWKES.
- R.—Dr. SHANDON.
- V. H. C.—BOADEN AND THOMAS :—and HUXTABLE AND SANDERS.
- H. C.—JARRETT AND WATKINS :—and J. H. NIGHTINGALE.
- C.—E. W. TREADAWAY HOARE.

CLASS 11.—WYANDOTTE, HEN. [12 entries.]

- I. (£1 10s.)—H. PICKLES.
- II. (15s.)—HUXTABLE AND SANDERS.
- III. (10s.)—W. SNELL.
- R.—BOADEN AND THOMAS.
- V. H. C.—BOADEN AND THOMAS :—G. W. HUXTABLE.
- H. C.—BOADEN AND THOMAS.
- C.—T. OKE :—and Dr. SHANDON.

CLASS 12.—ORPINGTON, COCK. [10 entries.]

- I. (£1 10s.)—CROSS BROS.
- II. (15s.)—W. H. CORNISH.
- III. (10s.)—W. COOK AND SONS.
- R.—T. FAWKES.
- V. H. C.—W. HAMBLY.
- H. C.—J. F. COOKE :—J. R. R. MITCHELL.
- C.—F. G. SMITH.

CLASS 13.—ORPINGTON, HEN. [8 entries.]

- I. (£1 10s.)—W. COOK AND SONS.
- II. (15s.)—T. FAWKES.
- III. (10s.)—W. H. CORNISH.
- R.—W. NANSCAWEN.
- V. H. C.—Mrs. F. JERRAM.

CLASS 14.—MINORCA, COCK. [8 entries.]

- I. (£1 10s.)—FURLAND BROS.
- II. (15s.)—A. G. PITTS.
- III. (10s.)—A. G. PITTS.
- R.—L. HAKE.
- V. H. C.—A. TUCKER.

CLASS 15.—MINORCA, HEN. [7 entries.]

- I. (£1 10s.)—FURLAND BROS.
- II. (15s.)—A. G. PITTS.
- III. (10s.)—A. G. PITTS.
- R.—L. HAKE.
- V. H. C.—BIRD AND KING :—and D. W. LEWIS.

CLASS 16.—ANDALUSIAN, COCK OR HEN. [4 entries.]

- I. (£1 10s.)—W. H. BOURNE.**
- II. (15s.)—W. H. BOURNE.**
- R.—F. PORTER.**
- V. H. C.—F. PORTER.**

CLASS 17.—LEGHORN, COCK. [5 entries.]

- I. (£1 10s.)—Rev. R. CHICHESTER.**
- II. (15s.)—STANBURY BROS.**
- R.—STANBURY BROS.**
- H. C.—A. J. HARRIS AND SON.**

CLASS 18.—LEGHORN, HEN. [4 entries.]

- I. (£1 10s.)—STANBURY BROS.**
- II. (15s.)—Rev. R. CHICHESTER,**
- R.—Capt. W. H. PALMER.**
- H. C.—A. J. HARRIS AND SON.**

CLASS 19.—HAMBURG, COCK. [4 entries.]

- I. (£1 10s.)—H. PICKLES.**
- II. (15s.)—J. CORNISH.**
- R.—E. W. GREEK.**
- V. H. C.—Viscount DEERHURST.**

CLASS 20.—HAMBURG, HEN. [5 entries.]

- I. (£1 10s.)—J. CORNISH.**
- II. (15s.)—H. PICKLES.**
- R.—Viscount DEERHURST.**
- V. H. C.—E. LUXTON.**
- C.—J. CORNISH.**

CLASS 21.—DORKING (COLOURED), COCK. [7 entries.]

- I. (£1 10s.)—H. REEVES.**
- II. (15s.)—Viscount DEERHURST.**
- III. (10s.)—NICHOLLS BROS.**
- R.—Viscount DEERHURST.**

CLASS 22.—DORKING (COLOURED), HEN. [5 entries.]

- I. (£1 10s.)—H. REEVES.**
- II. (15s.)—Viscount DEERHURST.**
- R.—Mr. MOGER.**
- V. H. C.—W. NANSCAWEN.**

CLASS 23.—DORKING (SILVER GREY), COCK. [9 entries.]

I. (£1 10s.)—S. OATEY.

II. (15s.)—Viscount DEERHURST.

III. (10s.)—Mrs. SPERLING.

R.—Viscount DEERHURST.

V. H. C.—Hon. F. AMHERST :—HOLLAND AND HAMILTON :—and H. REEVES.

CLASS 24.—DORKING (SILVER GREY), HEN. [8 entries.]

I. (£1 10s.)—Viscount DEERHURST.

II. (15s.)—H. REEVES.

III. (10s.)—Mrs. SPERLING.

R.—Hon. F. AMHERST.

V. H. C.—Viscount DEERHURST.

CLASS 25.—DORKING (WHITE OR CUCKOO), COCK. [1 entry.]
[No AWARD.]

CLASS 26.—DORKING (WHITE OR CUCKOO), HEN. [5 entries.]

I. (£1 10s.)—P. LEE.

II. (15s.)—H. REGNART.

R.—C. B. FULLER.

V. H. C.—H. REGNART.

H. C.—C. B. FULLER.

CLASS 27.—OLD ENGLISH GAME, COCK. [7 entries.]

I. (£1 10s.)—Col. E. C. A. SANFORD.

II. (15s.)—W. STANFORD.

III. (10s.)—J. HUTCHINGS.

CLASS 28.—OLD ENGLISH GAME, HEN. [11 entries.]

I. (£1 10s.)—F. G. STEVENSON.

II. (15s.)—J. HUTCHINGS.

III. (10s.)—J. COOMS.

R.—J. C. HUXTABLE.

H. C.—Miss B. HEARN :—and J. E. D. MOYSEY.

CLASS 29.—INDIAN GAME, COCK. [8 entries.]

I. (£1 10s.)—Miss A. FRAYN.

II. (15s.)—W. BRENT.

III. (10s.)—S. FRIEND.

R.—T. JARVIS.

CLASS 30.—INDIAN GAME, HEN. [6 entries.]

- I. (£1 10s.)—W. BRENT.
- II. (15s.)—R. FRAYN.
- III. (10s.)—J. N. JACKMAN.
- R.—E. W. TREADAWAY HOARE.

CLASS 31.—MALAY, COCK. [4 entries.]

- I. (£1 10s.)—J. FRAYN.
- II. (15s.)—J. C. HUXTABLE.
- R.—J. COCK.

CLASS 32.—MALAY, HEN. [8 entries.]

- I. (£1 10s.)—J. FRAYN.
- II. (15s.)—J. LOCK.
- III. (10s.)—J. COCK.
- R.—J. R. R. MITCHELL.

CLASS 33.—FRENCH, COCK. [3 entries.]

- I. (£1 10s.)—S. W. THOMAS.
- II. (15s.)—S. W. THOMAS.
- R.—P. LEE.

CLASS 34.—FRENCH, HEN. [3 entries.]

- I. (£1 10s.)—S. W. THOMAS.
- II. (15s.)—S. W. THOMAS.
- R.—P. LEE.

CLASS 35.—ANY OTHER DISTINCT BREED (NOT PREVIOUSLY MENTIONED), COCK. [8 entries.]

- I. (£1 10s.)—J. FRAYN, *Aseel*.
- II. (15s.)—J. R. R. MITCHELL, *Scotch Grey*.
- III. (10s.)—Miss M. EDWARDS, *Silkie*.
- R.—E. B. BEAUCHAMP, *Silver Campine*.
- H. C.—J. HUTCHINGS, *Aseel*.

CLASS 36.—ANY OTHER DISTINCT BREED (NOT PREVIOUSLY MENTIONED), HEN. [7 entries.]

- I. (£1 10s.)—J. D. T. PARSONS, *Scotch Grey*.
- II. (15s.)—J. HUTCHINGS, *Aseel*.
- III. (10s.)—J. GOOMS.
- R.—E. B. BEAUCHAMP, *Silver Campine*.

CLASS 37.—COCHIN, BRAHMA, LANGSHAN, PLYMOUTH ROCK, WYANDOTTE, OR ORPINGTON, COCKEREL. [11 entries.]

(In Classes 37 to 46 the birds must have been hatched after December 31, 1901.)

- I. (£1 10s.)—W. COOK AND SONS, *Orpington*, January 17.
- II. (15s.)—W. T. MICHAEL, *Plymouth Rock*, January 11.
- III. (10s.)—BOADEN AND THOMAS, *Wyandotte*, January 10.
- R.—J. T. DAVIES, *Orpington*, January 1.
- H. C.—F. HARVEY AND SON, *Langshan*, January 7.

CLASS 38.—COCHIN, BRAHMA, LANGSHAN, PLYMOUTH ROCK, WYANDOTTE, OR ORPINGTON, PULLET. [14 entries.]

- I. (£1 10s.)—W. H. CORNISH, *Orpington*, January 1.
- II. (15s.)—BOADEN AND THOMAS, February.
- III. (10s.)—F. HARVEY AND SON, *Langshan*, January 7.
- R.—E. MAYNARD, January 21.
- H. C.—R. J. C. LINGWOOD, *Cochin*, January :—and W. SNELL, *Wyandotte*, January 10.
- C.—J. T. DAVIES, *Orpington*, January 6 :—and J. A. HOWELL, *Orpington*, January 5.

CLASS 39.—MINORCA, ANDALUSIAN, LEGHORN, HAMBURG, OR FRENCH, COCKEREL. [5 entries.]

- I. (£1 10s.)—J. CORNISH, *Hamburg*, January 20.
- II. (15s.)—S. W. THOMAS, *Houdan*, February 6.
- R.—T. FAWKES, *Minorca*.
- H. C.—STANBURY BROS, *Leghorn*, January 5.

CLASS 40.—MINORCA, ANDALUSIAN, LEGHORN, HAMBURG, OR FRENCH, PULLET. [3 entries.]

- I. (£1 10s.)—J. CORNISH, *Hamburg*, January 20.
- II. (15s.)—S. W. THOMAS, *Crève*, February 6.
- R.—T. FAWKES, *Minorca*.

CLASS 41.—DORKING, GAME, MALAY, OR ANY OTHER DISTINCT BREED (NOT PREVIOUSLY MENTIONED), COCKEREL. [9 entries.]

- I. (£1 10s.)—R. FRAYN.
- II. (15s.)—H. REEVES, *Dorking*, January 6.
- III. (10s.)—J. GOULD, *Indian Game*, January 2.
- R.—MRS. J. HEBDITCH, *Dorking*, January 2.
- V. H. C.—W. BRENT, *Indian Game*, January 2.
- H. C.—J. N. JACKMAN, *Indian Game*, January 1.
- C.—G. C. DENNIS, January 27.

CLASS 42.—DORKING, GAME, MALAY, OR ANY OTHER DISTINCT BREED (NOT PREVIOUSLY MENTIONED), PULLET. [5 entries.]

I. (£1 10s.)—H. REEVES, *Dorking*, January 6.

II. (15s.)—R. FRAYN.

R.—G. C. DENNIS, *Malay*, January 27.

V. H. C.—Miss A. FRAYN, *Indian Game*.

LIVE TABLE POULTRY.

CLASS 43.—PAIR OF COCKERELS OF ANY PURE BREED. [4 entries.]

I. (£1 10s.)—J. R. R. MITCHELL, *Dorkings*, February 12.

II. (15s.)—J. N. JACKMAN, *Indian Game*, January 1.

R.—W. HAMBLBY, *Dorkings*, January 1.

CLASS 44.—PAIR OF PULLETS, OF ANY PURE BREED. [4 entries.]

I. (£1 10s.)—H. REEVES, *Dorkings*, January 6.

II. (15s.)—J. N. JACKMAN, *Indian Game*, January 6.

R.—W. HAMBLBY, *Dorkings*, January 1.

V. H. C.—J. R. R. MITCHELL, *Wyandotte*, January 26.

CLASS 45.—PAIR OF CROSS-BRED COCKERELS. [3 entries.]

I. (£1 10s.)—W. BETTS AND SON, *Orpington-Lincolnshire Buff*, February 4.

CLASS 46.—PAIR OF CROSS-BRED PULLETS. [1 entry.]

III. (10s.)—J. R. R. MITCHELL, *Game and Dorking*.

SELLING CLASSES.

CLASS 47.—ANY DISTINCT BREED, COCK (PRICE NOT TO EXCEED £1 1s.). [15 entries.]

I. (£1 10s.)—J. R. R. MITCHELL.

II. (15s.)—J. CORNISH.

III. (10s.)—S. W. THOMAS, *Brahma*.

R.—J. COOMS.

V. H. C.—W. SNELL, *Wyandotte*.

H. C.—S. FRIEND.

CLASS 48.—ANY DISTINCT BREED, HEN (PRICE NOT TO EXCEED £1 1s.).
[12 entries.]

- I. (£1 10s.)**—J. C. LAMACROFT.
II. (15s.)—W. BRENT, *Indian Game*.
III. (10s.)—W. H. CORNISH, *Orpington*.
R.—H. REEVES, *Dorking*.
C.—Viscount DEERHURST :—and J. R. R. MITCHELL.

DUCKS, GEESE, AND TURKEYS.

CLASS 49.—DRAKE OR DUCK (AYLESBURY). [5 entries.]

- I. (£1 10s.)**—F. READ.
II. (15s.)—F. READ.
R.—J. R. R. MITCHELL.

CLASS 50.—DRAKE OR DUCK (ROUEN). [8 entries.]

- I. (£1 10s.)**—Dr. F. R. HARRIS.
II. (15s.)—BOADEN and THOMAS.
III. (10s.)—J. R. R. MITCHELL.
R.—BOADEN and THOMAS.
H. C.—Hon. S. AMHERST.

CLASS 51.—DRAKE OR DUCK (PEKIN). [5 entries.]

- I. (£1 10s.)**—J. R. R. MITCHELL.
II. (15s.)—H. E. BUSH.
R.—O. PHILLIPS.
V. H. C.—J. R. R. MITCHELL.

CLASS 52.—GANDER OR GOOSE. [5 entries.]

- I. (£1 10s.)**—HOLLAND and HAMILTON.
II. (15s.)—Hon. S. AMHERST.
R.—Hon. S. AMHERST.
H. C.—A. E. DOWN.

CLASS 53.—TURKEY, COCK OR HEN. [9 entries.]

- I. (£1 10s.)**—W. JOHNSON.
II. (15s.)—Dr. F. R. HARRIS.
III. (10s.)—Mrs. MOGER.
R.—Mrs. MOGER.
V. H. C.—Dr. F. R. HARRIS :—and Col. E. C. SANFORD.
C.—H. BEER.

DEAD TABLE POULTRY.

(Forwarded alive, and killed and plucked by a Poulterer acting for the Society. See Regulation 12.)

CLASS 54.—PAIR OF COCKERELS OF ANY PURE BREED.
[6 entries.]

I. (£1.)—J. R. R. MITCHELL.

II. (15s.)—P. B. GOVETT, Wyandottes, January 7.

III. (10s.)—J. R. R. MITCHELL.

CLASS 55.—PAIR OF PULLETS OF ANY PURE BREED.
[7 entries.]

I. (£1.)—J. R. R. MITCHELL.

II. (15s.)—J. R. R. MITCHELL.

III. (10s.)—W. HAMBLY, Orpingtons, January 17.

CLASS 56.—PAIR OF CROSS-BRED COCKERELS. [7 entries.]

I. (£1.)—J. R. R. MITCHELL, Game-Dorking, January 2.

II. (15s.)—E. W. TREADAWAY HOARE, Game-Wyandotte, January 10.

III. (10s.)—J. R. R. MITCHELL, Game-Dorking, January 2.

R.—Mrs. G. TWINING, Game-Orpington, January 16.

CLASS 57.—PAIR OF CROSS-BRED PULLETS. [6 entries.]

I. (£1.)—Lady WARWICK HOSTEL, Indian Game-Orpingtons, January 14.

II. (15s.)—J. R. R. MITCHELL, Game-Dorking, January 2.

III. (10s.)—J. LETHBRIDGE, Indian Game-Dorking.

R.—J. R. R. MITCHELL, Game-Dorking, January 2.

C.—J. R. R. MITCHELL, Game-Dorking, January 2:—and Mrs. G. TWINING, Game-Orpington, January 5.

CLASS 58.—PAIR OF DUCKLINGS. [7 entries.]

I. (£1.)—F. READ, April 1.

II. (15s.)—J. R. R. MITCHELL, March 3 and 7.

III. (10s.)—J. R. R. MITCHELL, March 3 and 7.

R.—Mrs. F. JERRAM, January 16.

Bath and West and Southern Counties Society.

OBJECTS OF THE SOCIETY AND PRIVILEGES OF MEMBERSHIP.

ANNUAL EXHIBITIONS.

The Society annually holds an Exhibition in some city or town in England or Wales. Each section of the Society's district is visited at intervals, so that most Members have an opportunity of seeing the Show in their own neighbourhood every few years. Prizes to a large amount are given for Horses, Cattle, Sheep, Pigs, Farm Produce, &c. Provision is also made for the exhibition of Agricultural Implements and Machinery, Seeds, Cattle Foods, Artificial Manures, and articles of general utility. A substantially-built and completely-equipped Working-Dairy on a large scale is a special feature of these Exhibitions. Here explanatory demonstrations, and comparative tests of implements and processes are carried on with the assistance of well-known practical and scientific experts, and Butter-making Competitions are held. Among other features of the Annual Meeting are Shoeing and Milking Competitions, Poultry and Horticultural Shows, and Exhibitions illustrative of Bee-keeping, Home Industries, Art-Manufactures, and the Sciences connected with Agriculture and Horticulture.

Membership entitles to free admission to the Annual Exhibition, and also to the Grand Stand overlooking the Horse and Cattle Ring, to the Reserved Seats in the Working Dairy, and to the use of the Members' Special Pavilion for Reading, Writing, &c.

Entries can be made by Members (elected on or before the last Tuesday in January preceding the Show) at 15s. per entry for Horses (other than in the Jumping and Harness Classes), and 10s. per entry for Cattle, Sheep, and Pigs. Non-Members are required to pay £1 10s. per entry for Horses (other than in the Jumping and Harness Classes) and £1 per entry for the other Stock named. Similar reductions in the Fees in the Farm Produce, the Poultry, and other Classes are made to Members.

THE JOURNAL.

All Members receive free of charge the Society's Journal, which is published annually, bound in cloth. It has for its aim the dissemination of agricultural knowledge in a popular form, and in addition to original articles by well-known agricultural authorities, it contains particulars of the Society's general operations, full reports of its experimental and research work, prize awards, financial statements, lists of Members, reviews of new books on agriculture, &c. (The price of the Journal to non-Members is 6s. 4d. post free.)

CHEMICAL AND BOTANICAL FACILITIES.

The Society has a Consulting Chemist (Dr. J. A. Voelcker, M.A., F.I.C., &c.), and a Consulting Botanist (Mr. W. Carruthers, F.R.S.), from whom Members can obtain analyses and reports at reduced rates of charge.

EXPERIMENTS.

Experiments on Crops are conducted at experimental stations in various parts of the kingdom, and Members are enabled to take part in these and to receive reports thereon.

The Society has also an experimental station and laboratory attached to its Cheese School, and a similar department for carrying on researches in connection with Cider-making. At both stations systematic investigations are conducted by a scientific staff, acting in conjunction with practical experts, *detailed reports of which are furnished to Members.*

TECHNICAL EDUCATION.

The Society conducts, on behalf of the Somerset County Council, a Cheese School, where Students are received and boarded. *Members are admitted free to witness the Teaching and Competitions at any of the Society's Schools.*

ART.

One of the objects for which the Society was founded was the encouragement of Arts as well as Agriculture, and, to this end, exhibitions of Art-Manufactures and of work representative of Arts and Handicrafts, executed by pupils attending classes in connection with Technical Education Committees, Schools of Art, and other public bodies, are annually held.

TERMS OF MEMBERSHIP.

ANNUAL SUBSCRIPTIONS.

Ordinary Members, not less than	£1
Tenant Farmers, the rateable value of whose holdings does not exceed £200 a-year, not less than	10/-

Governors, who are eligible for election as President or Vice-President, and who subscribe not less than £2, are entitled, in addition to the privileges already mentioned, to an extra Season Ticket for the Annual Exhibition and to the Grand Stand, &c. Governors subscribing more than £2 are entitled to a further Ticket for every additional £1 subscribed.

Members subscribing less than £1 are entitled to all the privileges of Membership except that of entering Stock at reduced fees, and their admission Ticket for the Annual Show is available for *one day only* instead of for the whole time of the Exhibition.

LIFE COMPOSITIONS.

Governors may compound for their Subscriptions for future years by payment, in advance, of £20; and Members by payment, in advance, of £10. Governors and Members who have subscribed for 20 years may become Life-Members on payment of half these amounts.

Any person desirous of joining the Society can be proposed by a Member, or by

THOS. F. PLOWMAN,
Secretary and Editor,

4, Terrace Walk, Bath.

Telegraphic Address :—"PLOWMAN, BATH."

Bath and West and Southern Counties Society.

GENERAL LAWS,

As revised in accordance with the Report of a Special Committee; which Report was received and adopted by the Annual General Meeting of Members, held on May 30, 1895.

COMPOSITION OF THE SOCIETY.

I. The Society shall consist of a President, Vice-Presidents, Trustees, Council Treasurer, Secretary, and Members.

OBJECTS.

II. The Society shall have the following objects :—

- a. To hold Exhibitions of breeding stock, agricultural implements, and such other articles connected with agriculture, arts, manufactures or commerce as may be determined upon by the Council.
- b. To conduct practical and scientific investigations in agriculture.
- c. To promote technical education in agriculture by providing means of systematic instruction.
- d. To publish a Journal for circulation.

SUBSCRIPTIONS.

III. The Annual Subscriptions for Members shall be as follows:—

Governors (who are eligible for election as President or Vice-President) not less than	£2
Ordinary Members, not less than	£1
Tenant Farmers (the rateable value of whose holdings does not exceed £200 a-year) not less than	10/-

IV. The payment of £20 in one sum shall constitute a Governor for life, and of £10 in one sum an Ordinary Member for life; but any Governor who has subscribed not less than £2 annually for a period of twenty years may become a Life Governor on the further payment of £10 in one sum; and any Ordinary Member, who has subscribed not less than £1 annually for the same period, may become a Life-Member on the further payment of £5 in one sum.

V. Subscriptions shall become due and be payable in advance on the 1st of January in each year or as soon as the Subscriber has been elected a Member. When the election takes place during the last quarter of the year the subscription payable on election will be considered as applying to the ensuing year.

VI. A Member shall be liable to pay his subscription for the current year unless he shall have given notice, in writing, to the Secretary before January 1st of his intention to withdraw.

GOVERNING BODY.

VII. The entire management of the Society—including the making of By-laws, election of Members, determining the Prizes to be awarded, appointing Committees, fixing the Places of Meetings and Exhibitions, appointing or removing the Treasurer, Secretary, and such other officers as may be required to carry on

the business of the Society—shall be vested in the Council, who shall report its proceedings at the Annual Meetings of the Society.

VIII. The Council shall consist of the Patron (if any), President, Vice-Presidents, Trustees, and Treasurer (who shall be *ex-officio* Members), and of sixty-six elected Members.

ELECTION OF PRESIDENT, VICE-PRESIDENTS, TRUSTEES, AND COUNCIL.

IX. The election of a President for the year, of any additional Vice-President, of Trustees, and of the Members of Council representing the Divisions named in Law X., shall take place at the Annual Meeting of the Society, and they shall enter into office at the conclusion of the Exhibition during which such Annual Meeting has been held.

X. The sixty-six Members of the Council referred to in Laws VIII. and IX. shall consist of fifty-eight persons residing or representing property in the following Divisions, viz. :—

Twelve from the Counties of Devon and Cornwall, which shall be called the Western Division;

Twenty-four from the Counties of Somerset, Dorset, and Wilts, which shall be called the Central Division;

Twelve from the Counties of Hants, Berks, Oxon, Bucks, Middlesex, Surrey, Sussex, and Kent, which shall be called the Southern Division; and

Ten from the Counties of Worcester, Gloucester, Hereford and Monmouth, and the Principality of Wales, which shall be called the North-Western Division.

The remaining eight shall be elected (irrespective of locality) from the general body of Members, and shall form a Division which shall be called the "Without Reference to District" Division.

XI. One half of the elected Members in each of the five Divisions named in Law X. shall retire annually by rotation, but shall be eligible for re-election.

XII. The Council shall have power to nominate a President, Vice-Presidents, Trustees, and Members of Council for the approval of the annual meeting, and to fill up such vacancies in their own body as are left after the annual meeting, or as may from time to time occur during the interval between the annual meetings.

XIII. Nominations to offices, election to which is vested in the whole body of Members, must reach the Secretary ten days before the meeting at which such vacancies are to be filled up.

MEETINGS.

XIV. The Annual Meeting of the Society shall take place during the holding of the annual Exhibition.

XV. Special general meetings of the Society may be convened by the President on the written requisition of not less than three Members of Council; and all Members shall have ten days' notice of the object for which they are called together.

XVI. No Member of less than three months' standing, or whose subscription is in arrear, shall be entitled to vote at a meeting.

EXHIBITIONS.

XVII. The annual Exhibitions of the Society shall be held in different Cities or Towns in successive years.

XVIII. All Exhibitors shall pay such fees as may be fixed by the Council. Members subscribing not less than £1 per annum, who have been elected previous to February 1st, and have paid the subscription for the current year, shall be entitled to exhibit at such reduction in these fees as the Council shall determine.

PRIZES.

XIX. All prizes offered at the cost of the Society shall be open for competition to the United Kingdom.

XX. No person intending to compete for any prize offered at the annual Exhibition shall be eligible to act as a judge or to have any voice in the selection of judges to award the premiums in the department in which he exhibits.

XXI. If it be proved to the satisfaction of the Council that any person has attempted to gain a prize in this, or in any other Society, by a false certificate or by a misrepresentation of any kind, such person shall thereupon be for the future excluded from exhibiting in this Society.

JOURNAL.

XXII. The Proceedings of the Society, Awards of Prizes, Financial Statements, and List of Officers, Governors and Members shall be printed annually in the Society's Journal, and every Governor and Member, not in arrear with his subscription, shall be entitled to receive one copy, free of expense, and there shall be an additional number printed for sale.

POLITICS.

XXIII. No subject or question of a political tendency shall be introduced at any meeting of this Society.

ALTERATIONS IN LAWS.

XXIV. No new General Law shall be made or existing one altered, added to or rescinded, except at an annual or special general meeting, and then only provided that a statement of particulars, in writing, shall have been sent to the Secretary at least twenty-one days previous to the meeting at which the question is to be considered.

List of Officers.

1902-1903.

BRISTOL MEETING.

PATRON.

HIS MOST GRACIOUS MAJESTY THE KING.

PRESIDENT FOR 1902-1903.

HIS GRACE THE DUKE OF BEAUFORT.

TRUSTEES.

- PAGET, THE RIGHT HON. SIR RICHARD HORNER, Bart., Cranmore Hall,
Shepton Mallet.
*CLINTON, THE RIGHT HON. THE LORD, Heanton Satchville, Dolton,
N. Devon.
*BATH, THE MOST HON., THE MARQUESS OF, Longleat, Warminster.

VICE-PRESIDENTS.

- | | | |
|--------------------------------------|-----------|--|
| *WALES, H.R.H. PRINCE OF | | San'tringham, Norfolk |
| ACLAND, SIR C. T. D., Bart. | | Killerton, Exeter |
| *AMHERST, EARL | | Montreal, Sevenoaks, Kent |
| *BATH, MARQUESS OF | | Longleat, Warminster |
| BEST, CAPT. J. C., R.N. | | Vivod, Llangollen |
| BRYMER, W. E., M.P. | | Ilslington House, Dorchester |
| *CLARENDON, EARL OF | | The Grove, Watford |
| *CLINTON, LORD | | Heanton Satchville, Dolton, N.
Devon |
| *CORK AND ORRERY, EARL OF | | Marston, Frome |
| *COVENTRY, EARL OF | | Croome Court, Severn Stoke, Wor-
cester |
| DAW, R. R. M. | | Spurbarne, Exeter |
| DEVONSHIRE, DUKE OF, K.G. | | Chatsworth, Derbyshire |
| *DUCIE, EARL OF | | Tortworth, Falfield, R.S.O. |
| FITZHARDINGE, THE LORD | | Cranford, Hounslow |
| GIBBS, A. | | Tyntesfield, Bristol |
| *ILCHESTER, EARL OF | | Melbury, Dorchester |
| *JERSEY, EARL OF | | Middleton Park, Bicester, Oxon. |
| JONES, H. P. | | Beaufort House, Winchester |
| *LANDSLOWNE, MARQUESS OF, K.G. | | Bowood, Calne |
| *LLEWELYN, SIR J. T. D., Bart. | | Penllergare, Swansea |
| *LOPES, THE RIGHT HON. SIR M., Bart. | | Maristow, Roborough, S. Devon |
| MARLBOROUGH, DUKE OF | | Blenheim Palace, Woodstock |
| MILDMAY, SIR H. ST. JOHN, Bart. | | Dogmersfield Park, Winchfield |
| *MONTAGU OF BEAULIEU, LORD | | Palace House, Beaulieu, Hants |
| MOORE-STEVENS, J. C. | | Winscott, Great Torrington |

*. * Those to whose names an asterisk (*) is prefixed have filled the office of President.

VICE-PRESIDENTS—continued.

MORETON, LORD.	Saraden House, Chipping Norton
*MORLEY, EARL OF	Saltram, Plympton, Devon
MORRELL, G. HERBERT, M.P.	Headington Hill Hall, Oxford
*MOUNT-EDGCUMBE, EARL OF	Mount Edgcumbe, Devonport
NEVILLE-GRENVILLE, R.	Butleigh Court, Glastonbury
NORTHUMBERLAND, DUKE OF	Albury Park, Guildford
*ONSLOW, EARL OF	7, Whitehall Place, London, S.W.
PAGET, THE RIGHT HON. SIR R. H., Bart.	Cranmore Hall, Shepton Mallet
POLTIMORE, LORD	Poltimore, Exeter
*PORTMAN, VISCOUNT	Bryanston, Blandford
PORTAL, MELVILLE	Laverstock House, Micheldever, Hants
SAINT GERMAN, EARL OF	Port Elliot, Devonport
SANDERS, E. J.	Stoke House, Exeter
SOMERSET, DUKE OF	Maiden Bradley, Bath
STORY-MASKELYNE, N., F.R.S.	Basett Down House, Swindon
THYNNE, LORD HENRY	Muntham, Worthing
*TREDGAR, LORD	Tiedegar Park, Newport, Monmouth
WALBOND, RIGHT HON. SIR W. H., Bart., M.P.	Bradfield, Cullompton
*WARWICK, EARL OF	Warwick Castle
WILLIAMS, E. W.	Herrington, Dorchester
*WINDSOR, LORD.	Hewell Grange, Bromsgrove
THE LORD WARDEN OF THE STANNARIES.	
THE SURVEYOR-GENERAL OF THE DUCHY OF CORNWALL.	
THE RECEIVER-GENERAL OF THE DUCHY OF CORNWALL.	

. Those to whose names an asterisk (*) is prefixed have filled the office of President.

MEMBERS OF COUNCIL.

EX-OFFICIO MEMBERS.

THE PATRON.
THE PRESIDENT.
THE VICE-PRESIDENTS.

THE TREASURER.
THE CONSULTING SURVEYOR.

ELECTED MEMBERS.

WESTERN DIVISION (DEVON AND CORNWALL).

(12 Representatives.)

Elected in 1901:—

Name.	Address.
BOSCAWEN, REV. A.	Ludgvan Rectory, Long Roch, R.S.O., Cornwall
DRUMMOND, H. W.	Syon House, Budleigh, Devon [Exeter
DYMOND, F. W.	21, Southernhay, West, Llewellyn, W. J.
SULLIVANT, A. O.	Southwood, Tiverton
VOSPER, W. P.	Culmleigh, Stoke Canon, Exeter
	Merafield, Plympton

Elected in 1902:—

Name.	Address.
BUCKINGHAM, REV. The	Rectory, Doddlecombsleigh, Exeter
F. F.	
COLLINS, C. R.	Hartwell House, Exeter
MARKER, R.	Combe, Honiton
SHELLEY, SIR J., Bt.	Shobrooke Park, Crediton
WILLIAMS, SIR W. R., Bart.	Heanton, Barnstaple
WYATT-EDGEHILL, COL. A.	Cowley Place, Exeter

CENTRAL DIVISION (SOMERSET, DORSET, AND WILTS).

(24 Representatives.)

There are two vacancies in this Division.

DIKE, T.	Long Ashton Lodge, Clifton
EDWARDS, C. L. F.	The Court, Axbridge, Somerset
FARWELL, F. G.	11, Laura Place, Bath
FOWLER, W. H.	Claremont, Taunton
GIBBONS, G.	Tunley Farm, near Bath
HALL, J. F.	Sharcombe, Wells, Somerset
HETTESBURY, LORD.	Heytesbury, Wilts
NEILL, SIR A. D., Bart., C.B.	Grittleton, Chippenham
RAWLENCE, E. A.	Newlands, Salisbury
SKINNER, A. C.	Pound, Bishop's Lydeard, Somerset
SOMERVILLE, A. F.	Binder House, Wells
STRACHEY, SIR E., Bart., M.P.	Pensford, Somerset

ALLEN, J. D.	Springfield House, Shepton Mallet
BEST, COL. G.	Charlton House, Ludwell, Salisbury
FOX-CROFT, E. T. D.	Hinton Charterhouse, Bath
GIBSON, J. T.	Havet Lodge, Langford, R.S.O., Somerset
GOODFORD, A. J.	Chilton Cantelo, Somerset
HOBHOUSE, RT. HON. H., M.P.	Hadspen House, Castle Cary
LLEWELLYN, COL. E., H., M.P.	Langford Court, Langford, Somerset
MAULE, M. ST. J.	Chapel House, Bath
NAPIER, H. B.	Long Ashton, Clifton, Bristol
PARRY-OKEDEN, COL. W. E. P.	Turnworth, Blandford, Dorset
SHERSTON, MAJOR C. D.	Evercreech, Bath
SKIRNE, COL. H. M.	Warleigh Manor, Bath

SOUTHERN DIVISION (HANTS, BERKS, OXON, BUCKS, MIDDLESEX, SURREY, SUSSEX, AND KENT).

(12 Representatives.)

ASHCROFT, W.	13, The Waldrons, Croydon
BENTON, J. H.	Englefield House, Reading
BOTELER, CAPT. W. J. C.	The Elms, Taplow
CUNDALL, H. M., F.S.A.	Richmond, Surrey
SKYMOUR, R. A. H.	46, Earl Street, Maldstone
SUTTON, M. J.	Henley Park, Oxon

DRUCK, A. F. M.	16, Queen Street, Oxford
GORING, C.	Wiston Park, Steyning
KNOLLYS, C. R.	The Grange, Alresford, Hants
RUTHERFORD, J. A.	Highclere Estate Office, Newbury
STANFORD, A.	Katona, Steyning
WHITEHEAD, C. F. L. S.	Barnimghouse, Maldstone

NORTH-WESTERN DIVISION (WORCESTERSHIRE, GLOUCESTERSHIRE, HEREFORDSHIRE, MONMOUTHSHIRE, AND WALES).

(10 Representatives.)

ALEXANDER, D. T.	Cardiff
BAKER, G. E. LLOYD	Hardwicke Court, Gloucester
BRITTEN, ADMIRAL R. F.	Kenswick, Worcester
TAYLOR, H. W.	Showle Court, Ledbury
TURNER, A. P.	The Leen, Pembridge, Hereford

CHESTER-MASTER, COL. T. W.	Knowle Park, Almondsbury
HARRIS, DR. RUTHERFORD	Llangibby Castle, Newport, Mon.
MARTIN, G. E.	Ham Court, Upton-on-Severn
PHILLIPS, C. D.	Newport, Mon. [Mon.
STRATTON, R.	The Duffryn, Newport,

WITHOUT REFERENCE TO DISTRICT DIVISION.

(8 Representatives.)

COBB, H. M.	Higham, Kent
MATHEWS, E.	Chequers Mead, Putters Bar
NAPER, COL. W. D.	84, Cornwall Gardens, London, S.W.
WEBB, E.	Wordsley, Stourbridge

BEST, CAPT. T. G.	Redrice, Andover, Hants
JERVEISE, F. H. T.	Leek Wootton, Warwickshire
LATHAM, T.	Dorchester, Oxon
RANSOME, J. E.	Orwell Works, Ipswich

STANDING COMMITTEES, 1902-1903.

[The PRESIDENT is *ex-officio* Member of all Committees.]**ALLOTMENT.**BEST, CAPT. J. C., *Chairman.*

BEST, COL. G.	EDWARDS, C. I. F.	NAPIER, H. B.
BOTELEH, CAPT. W. J. C.	GIBBONS, G.	SILLIFANT, A. O.

CONTRACTS., *Chairman.*

BEST, CAPT. J. C.	EDWARDS, C. L. F.	NEVILLE-GRENVILLE, R.
BOTELEH, CAPT. W. J. C.	NAPIER, H. B.	

DAIRY.[ACLAND, SIR C. T. D., Bart., *Chairman.*

ALLEN, J. D.	KNOLLYS, C. R.	NAPIER, H. B.
ASHCROFT, W.	LATHAM, T.	NEVILLE-GRENVILLE, R.
BOSCAWEN, REV. A. T.	LLEWELLYN, COL. E. H.	PAGET, RT. HON. SIR R. H.,
FOWLER, W. H.	(M.P.)	Bart.
GIBBONS, G.	MASKELYNE, N. STORY,	SOMERVILLE, A. F.
GIBSON, J. T.	F.R.S.	STRACHEY, SIR E., Bart.
HALL, J. F.	MATHEWS, E.	(M.P.)
		TAYLOR, H. W.

DISQUALIFYING.

THE STEWARDS OF HORSES.	THE STEWARDS OF STOCK.
THE STEWARD OF POULTRY.	

EXPERIMENTS AND EDUCATION.

ACLAND, SIR C. T. D., Bart.	GIBBONS, G.	MASKELYNE, N. STORY,
ALLEN, J. D.	GIBSON, J. T.	F.R.S.
ASHCROFT, W.	HALL, J. F.	NEVILLE-GRENVILLE, R.
BAKER, G. E. LLOYD-	HEYTESBURY, LORD	PAGET, RT. HON. SIR R. H.,
BENYON, J. H.	HOBHOUSE, RT. HON. H.	Bart.
BEST, COL. G.	(M.P.)	RAWLENCE, E. A.
DYKE, T.	KNOLLYS, C. R.	RUTHERFORD, J. A.
DRUCE, A. F. M.	LATHAM, T.	SKINNER, A. C.
FARWELL, F. G.	LLEWELLYN, W. J.	SUTTON, M. J.
FOXCROFT, E. T. D.		

(With power to add to their number.)

FINANCE.COLLINS, C. R., *Chairman.*

DYKE, T.	MARTIN, G. E.
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IMPLEMENT REGULATIONS.SHELLEY, SIR J., Bart., *Chairman.*

ACLAND, SIR C. T. D., Bart.	DYKE, T.	NAPIER, H. B.
BEST, CAPT. J. C.	EDWARDS, C. L. F.	NEVILLE-GRENVILLE, R.
BOTELEH, CAPT. W. J. C.	GIBBONS, G.	RANSOME, J. E.
BRITTEN, ADMIRAL, R. F.	HEYTESBURY, LORD	

JOURNAL.

ACLAND, SIR C. T. D., Bart., *Chairman.*

DYMOND, F. W.
FARWELL, F. G.

MARTIN, G. E.

MASKELYNE, N. STORY-
F.R.S.

JUDGES' SELECTION.

BEST, COL. G., *Chairman.*

ALEXANDER, D. T.
ALLEN, J. D.
CHESTER-MASTER, COL.,
T. W.

DRUCE, A. F. M.
GIBBONS, G.
HALL, J. F.
LLEWELLYN, W. J.

PARRY-OKEDEN, COL. W.
E. P.
SHELLEY, SIR J., Bart.
SILLIFANT, A. O.

RAILWAY ARRANGEMENTS AND ADVERTISEMENTS.

BEST, CAPT. J. C., *Chairman.*

ALEXANDER, D. T.
AMHERST, EARL
CORK, EARL OF
COVENTRY, EARL OF

DRUCE, A. F. M.
DRUMMOND, H. W.
LLEWELLYN, COL. E. H.
(M.P.)

LOPES, RIGHT HON. SIR
M., Bart.
PHILLIPS, C. D.
SHELLEY, SIR J., Bart.

(With power to add to their number.)

SCIENCE AND ART.

WYATT-EDGEELL, COL. A., *Chairman.*

ACLAND, SIR C. T. D.,
Bart.
BATH, MARQUESS OF
CUNDALL, H. M. (F.S.A.)

DAW, R. R. M.
FARWELL, F. G.
HALL, J. F. [(M.P.)
HOBHOUSE, RT. HON. H.]

MASKELYNE, N. STORY-
F.R.S.
MORRELL, G. H. (M.P.)

(With power to add to their number.)

SELECTION.

THE CHAIRMEN OF ALL OTHER COMMITTEES.

SHOW DATES.

BEST, CAPT. J. C., *Chairman.*

THE CHAIRMEN OF THE ALLOTMENT, DAIRY, FINANCE, IMPLEMENT REGULATIONS,
RAILWAY ARRANGEMENTS, AND STOCK PRIZE-SHEET COMMITTEES, and THE
STEWARD OF WORKS.

(With power to add two to their number.)

STOCK PRIZE-SHEET.

BEST, COL. G., *Chairman.*

ALEXANDER, D. T.
ALLEN, J. D.
ASHCROFT, W.
BATH, MARQUESS OF
BOSCAWEN, REV. A. T.

BUCKINGHAM, REV. F. F.
DRUCE, A. F. M.
FARWELL, F. G.
GIBBONS, G.
HEYTESBURY, LORD

LLEWELLYN, W. J.
SHELLEY, SIR J., Bart.
SILLIFANT, A. O.
STANFORD, A.
VOSPER, W. P.

Stewards.*Arts.*

CUNDALL, H. M. (F.S.A.)
 FARWELL, F. G.

Cattle, Sheep and Pigs.

DRUCE, A. F. M.
 SILLIFANT, A. O.
 LLEWELLYN, W. J.

Chaplain.

BOSCAWEN, REV. A. T.

Cider.

FARWELL, F. G.

Dairy.

GIBBONS, G. KNOLLYS, C. R.

Dairy Schools.

GIBBONS, G.

Dairy Tests.

SOMERVILLE, A. F.

Experiments.

ASHCROFT, W. DRUCE, A. F. M.

Finance.

COLLINS, C. R. MARTIN, G. E.
 DYKE, T.

Horses.

BEST, COL. G.
 HETTESBURY, LORD

Horticulture.

BOSCAWEN, REV. A. T.

Music.

CUNDALL, H. M. (F.S.A.)

Poultry.

ASHCROFT, W.

Shoeing.

LATHAM, T.

Works.

NAPIER, H. B.

Yard.

BEST, CAPT. J. C.
 EDWARDS, C. L. F.
 BOTELER, CAPT. W. J. C.

Other Honorary Officials.

Treasurer—BADCOCK, H. J.

| *Local Treasurer*—DYMOND, F. W.

Consulting Surveyor—SPACKMAN, H.

Permanent Officials.

Secretary and Editor—PIOWMAN, THOMAS F.

Associate Editor.

LLOYD, F. J. (F.C.S.)

Auditor.

GOODMAN, A. (*Chartered Accountant*)

Consulting Chemist.

VOELCKER, DR. J. A. (M.A., F.I.C.)

Consulting Botanist.

CARRUTHERS, W. (F.R.S.)

Veterinary Inspector.

BROWN, SIR G. T. (C.B.)

Superintendent of Works.

ROSSITER, J.

Annual Exhibitions.

Year.	Place Visited.	Local Subscrip- tion.	Prizes.			Total Local Contri- bution.	President.	Admissions.		
			Local Com- mittee.	Local Societies.	Local Rea- dents.			On 24. &c. days.	On 14. Days.	Total.
1852	Taunton	£ 210	£	£	£	210	Lord Portman.	..	..	..
1853	Plymouth	450	..	..	..	450	Sir T. D. Acland, Bart.	..	..	..
1854	Bath	450	..	..	..	450	William Miles, M.P.	..	..	..
1855	Tiverton	450	..	..	..	450	Earl Fortescue	..	..	..
1856	Yeovil	450	..	..	..	450	C. A. Moody, M.P.	..	..	..
1857	Newton Abbot.	700	..	..	..	700	Lord Courtenay	..	..	..
1858	Cardiff	800	..	..	..	800	Lord Rivers	..	..	..
1859	Barnstaple	800	85	..	£1	968	John Sillifant.	..	..	..
1860	Dorchester	900	..	..	..	900	Lord Rivers	10,709	11,949	22,658
1861	Truro	900	..	..	..	900	J. W. Buller, M.P.	15,201	14,220	29,421
1862	Wells	900	..	..	..	900	Sir T. D. Acland, Bart.	10,578	4,775	15,353
1863	Exeter	900	..	..	..	900	Marquis of Bath	15,635	19,284	34,919
1864	Bristol	1000	106	..	50	1156	Earl Fortescue	22,377	65,678	88,055
1865	Hereford	900	358	..	..	1258	Lord Taunton.	16,575	35,261	51,836
1866	Salisbury	900	57	..	..	957	Earl of Portsmouth	7,288	18,737	26,025
1867	Salisbury	..	..	..	..	..	J. Tremayne	7,502	16,702	24,204
1868	Falmouth	900	..	..	..	900	Sir J. T. B. Duckworth, Bart.	11,393	19,495	30,888
1869	Southampton	900	132	..	18	1050	Earl of Carnarvon	15,340	41,290	56,630
1870	Taunton	900	..	..	..	900	Sir S. H. Northcote, Bart., C.B., M.P.	17,952	33,653	51,605
1871	Guildford	900	110	..	..	1010	Earl of Cork	10,656	23,406	34,062
1872	Dorchester	800	..	..	10	810	Duke of Marlborough, K.G.	12,791	21,517	34,308
1873	Plymouth	800	400	..	..	1200	Earl of Mount-Edgcumbe	16,665	45,744	62,409
1874	Bristol	800	403	..	..	1203	Sir Massey Lopes, Bart., M.P.	37,329	72,791	110,120
1875	Croydon.	800	245	..	..	1045	R. Bannion, M.P.	14,518	26,028	40,546
1876	Hereford	800	381	..	..	1181	Earl of Ducie	16,396	32,645	49,041

ANNUAL EXHIBITIONS—continued.

Year.	Place Visited.	Local Subscription.	Prizes.			Total Local Contribution.	President.	Admissions.			Total.
			Local Committee.	Local Societies.	Local Residents.			On 1st day.	On 2d, 3d, &c. days.	On 14 Days.	
1877	Bath	£ 800	£ 215	£ ..	£ ..	£ 1015	Marquis of Lansdowne	..	27,625	48,852	76,477
1878	Oxford	800	..	170	6	976	Earl of Jersey	..	12,414	26,995	39,409
1879	Exeter	800	..	..	10	810	Earl of Morley	..	14,634	40,533	55,167
1880	Worcester	800	..	254	..	1054	Earl of Coventry	..	8,415	37,675	46,090
1881	Tunbridge Wells	800	245	34	..	1079	Marquess of Abergavenny.	..	13,368	33,236	46,604
1882	Cardiff	800	200	198	17	1215	Lord Tredegar	..	23,941	38,680	62,621
1883	Bridgwater	800	78	..	..	878	Lord Brooke, M.P.	..	17,171	31,241	48,412
1884	Maidstone	800	310	33	75	1218	Viscount Holmesdale	..	13,501	31,053	44,554
1885	Brighton	800	227	33	82	1142	Viscount Hampden	..	9,637	39,851	49,488
1886	Bristol	800	525	..	..	1325	Lord Carlingford	..	29,580	70,999	100,579
1887	Dorchester	800	..	112	..	912	Earl of Ilchester	..	8,860	29,846	33,706
1888	Newport (Mon.)	803	100	..	..	903	Lord Tredegar	..	14,878	38,567	53,445
1889	Exeter	803	..	..	10	810	Lord Clinton	..	16,405	36,195	52,600
1890	Rochester	800	294	..	26	1120	Earl of Darnley	..	3,480	48,314	51,794
1891	Bath	800	50	103	100	1053	Earl Temple	..	23,510	52,185	75,695
1892	Swansea	800	200	100	10	1110	Sir J. T. D. Llewelyn, Bart.	..	18,364	54,609	72,973
1893	Gloucester	800	400	..	..	1200	Lord Fitzhardinge	..	14,272	40,368	54,640
1894	Guildford	800	174	..	10	984	Earl of Onslow	..	8,671	29,813	38,484
1895	Taunton	800	85	160	10	1055	Viscount Portman	..	13,181	30,111	43,292
1896	St. Albans	800	152	..	..	952	Earl of Clarendon	..	12,056	22,380	34,436
1897	Southampton	800	50	..	..	850	Lord Montagu of Beaulieu	..	8,284	33,750	42,034
1898	Cardiff	800	200	..	..	1000	Lord Windsor	..	13,101	42,501	55,602
1899	Exeter	800	..	225	5	1030	Marquess of Bath	..	16,091	39,832	55,923
1900	Bath	800	100	150	10	1050	Marquess of Bath	954	11,601	30,814	49,369
1901	Croydon	800	115	..	..	915	{ H.R.H. The Duke of Cornwall } and York, K.G.	1,196	9,362	30,693	41,951
1902	Plymouth	800	165	100	36	1041	Earl of Morley	849	12,699	40,560	53,606

Members' Privileges.

EXAMINATION OF PLANTS AND SEEDS.

Members of the Bath and West and Southern Counties Society, who may also be Members of other Agricultural Societies, are particularly requested, in applying for Examination of Plants and Seeds, to state that they do so as Members of the first-named Society.

The Council have arranged for the following rates of charge for the examination, by the Society's Consulting Botanist, of Plants and Seeds for the *bona fide* and individual information and benefit of Members of the Society (not being seedsmen). The charge for examination must be paid at the time of application, and the carriage of all parcels must be prepaid.

No.		
1.	A report on the purity and germinating power of a sample of seed, stating the sorts and amount of any other seeds found therein	1s.
2.	Determination of the species of any weed or other plant, or of any epiphyte or vegetable parasite, with a report on its habits, and the means for its extermination or prevention	1s.
3.	Report on any disease affecting farm crops	1s.
4.	Determination of the species of a collection of natural grasses found in any district, with a report on their habits and pasture value	6s.
<i>N.B.—The Consulting Botanist's Reports on Seeds are furnished to enable Members,—purchasers of seeds and corn for Agricultural or Horticultural purposes,—to test the value of what they buy, and not to be used or made available for advertising or trade purposes.</i>		

PURCHASE OF SEEDS.

The purchaser should obtain from the vendor, by invoice or otherwise, a proper designation of the seed he buys, with a guarantee that it contains not more than a specified amount of other seeds, and is free from ergot, or, in the case of clovers, from dodder, and of the percentage of seeds that will germinate.

The germination of cereals, green crops, clover, and timothy grass should be not less than 90 per cent.; of fox-tail not less than 60 per cent.; of other grasses not less than 70 per cent.

The Council strongly recommend that the purchase of prepared mixtures should be avoided, and that the different seeds to be sown should be purchased separately.

INSTRUCTIONS FOR SELECTING AND SENDING SAMPLES.

I. SEEDS.

In sending seed or corn for examination the utmost care must be taken to secure a fair and honest sample. In the case of grass-seeds the sample should be drawn from the centre of the sack or bag, and in all cases from the bulk delivered to the purchaser and not from the purchase sample. When bought by sample, the whole or part of that sample should also be sent.

When it is considered necessary to secure legal evidence, the sample should be taken from the bulk and placed in a sealed bag in the presence of a reliable witness who is acquainted with the identity of the bulk, and care should be taken that the purchased sample and bulk be not tampered with after delivery, or mixed or come in contact with any other sample or stock.

One ounce of grass and other small seeds should be sent, and two ounces of cereals or larger seeds. The exact name under which the seed has been bought should be sent with it.

Grass-seeds should be sent at least FOUR WEEKS, and clover-seeds TWO WEEKS before they are required, and they should not be sown until the report has been received.

II. PLANTS.

In collecting specimens of plants, the whole plant should be taken up, and the earth shaken from the roots. If possible, the plants must be in flower or fruit. They should be packed in a light box, or in a firm paper parcel.

Specimens of diseased plants or of parasites should be forwarded as fresh as possible. They should be placed in a bottle, or packed in tinfoil or oil-silk.

All specimens should be accompanied with a letter specifying the nature of the information required, and stating any local circumstances (soil, situation, &c.) which, in the opinion of the sender, would be likely to throw light on the inquiry.

Parcels or letters containing seeds or plants for examination (carriage or postage prepaid) must be addressed to Mr. W. CARRUTHERS, F.R.S., 43, Central Hill, Norwood, London, S.E.

Members' Privileges.

ANALYSES OF FERTILISERS, FEEDING-STUFFS, WATERS, SOILS, &c.

(Applicable only to the case of Persons who are not commercially engaged in the manufacture or sale of any substance sent for Analysis.)

Members of the Bath and West and Southern Counties Society, who may also be Members of other Agricultural Societies, are particularly requested, in applying for Analyses, to state that they do so as Members of the first-named Society.

THE Council have fixed the following rates of Charges for Chemical Analyses to Members of the Society.

These privileges are applicable only when the Analyses are for *bona fide* agricultural purposes, and are required by Members of the Society for their own use and guidance in respect of farms or land in their own occupation and within the United Kingdom.

The analyses are given on the understanding that they are required for the individual and sole benefit of the Member applying for them, and must not be used for other persons, or for commercial purposes.

Land or estate agents, bailiffs, and others, when forwarding samples, are required to state the names of those Members on whose behalf they apply.

Members are also allowed to send for analysis under these privileges any manures or feeding-stuffs to be used by their outgoing tenants, or which are to be given free of cost to their occupying tenants.

The analyses and reports may not be communicated to either vendor or manufacturer, except in cases of dispute.

Members are requested, when applying for an analysis, to quote the number in the subjoined schedule under which they wish it to be made.

No.		
1.	An opinion of the purity of bone-dust or oil-cake (each sample)	2s. 6d.
2.	An analysis of sulphate or muriate of ammonia, or of nitrate of soda, together with an opinion as to whether it be worth the price charged	5s.
3.	An analysis of guano; showing the proportion of moisture, organic matter, sand, phosphate of lime, alkaline salts and ammonia, together with an opinion as to whether it be worth the price charged	10s.
4.	An analysis of mineral superphosphate of lime for soluble phosphates only, together with an opinion as to whether it be worth the price charged	5s.
5.	An analysis of superphosphate of lime, dissolved bones, &c., showing the proportions of moisture, organic matter, sand, soluble and insoluble phosphates, sulphate of lime, and ammonia, together with an opinion as to whether it be worth the price charged	10s.
6.	An analysis of bone-dust, basic slag, or any other ordinary artificial manure, together with an opinion as to whether it be worth the price charged	10s.
7.	An analysis of compound artificial manures, animal products, refuse substances used for manure, &c.	from 10s. to £1
8.	An analysis of limestone, showing the proportion of lime	7s. 6d.
9.	An analysis of limestone, showing the proportion of lime and magnesia	10s.
10.	An analysis of limestone or marl, showing the proportion of carbonate, phosphate, and sulphate of lime and magnesia, with sand and clay	10s.
11.	Partial analysis of a soil, including determinations of clay, sand, organic matter, and carbonate of lime	10s.
12.	Complete analysis of a soil	£3
13.	An analysis of oil-cake or other substance used for feeding purposes, showing the proportion of moisture, oil, mineral matter, albuminous matter, and woody fibre, as well as of starch, gum, and sugar in the aggregate; and an opinion of its feeding and fattening or milk-producing properties	10s.
14.	Analysis of any vegetable product	10s.
15.	Determination of the "hardness" of a sample of water before and after boiling	5s.
16.	Analysis of water of land-drainage, and of water used for irrigation	£1
17.	Analysis of water used for domestic purposes	£1 10s.
18.	An analysis of milk (to assist Members in the management of their Dairies and Herds, <i>bona fide</i> for their own information and not for trade purposes, nor for use in connection with the Sale of Food and Drugs Acts)	5s.
19.	Personal consultation with the Consulting Chemist. (To prevent disappointment it is suggested that Members desiring to hold a consultation with the Consulting Chemist should write to make an appointment)	5s.
20.	Consultation by letter	5s.
21.	Consultation necessitating the writing of three or more letters	10s.

Members wishing to exercise their privileges on the above-named terms, should forward their samples for examination, *by post or parcel, prepaid*, to the Consulting Chemist, DR. JOHN AUGUSTUS VOELCKER, M.A., F.R.C., 22, Tudor Street, New Bridge Street, London, E.C.

The fees for analysis must be sent to the Consulting Chemist at the time of application.

GUIDE TO PURCHASERS OF FERTILISERS AND FEEDING-STUFFS.

UNDER the provisions of the Fertilisers and Feeding Stuffs Act of 1893, District Agricultural Analysts have been appointed throughout the country to examine samples taken in compliance with the Act. Inasmuch, however, as the procedure necessitated in these cases is very complicated, Members of the Bath and West and Southern Counties Society will find it much simpler to avail themselves of the privileges afforded by the Society, and will be able to protect themselves, both amply and with far less trouble, by making their purchases in accordance with the following directions, and by stipulating that purchases shall be subject to the analysis and report of the Society's Consulting Chemist.

Purchasers are recommended in every case to insist upon having an *Invoice* given to them. This invoice should set out clearly:—

In the case of Fertilisers—

- (1.) the name of the fertiliser;
- (2.) whether the fertiliser be artificially compounded or not;
- (3.) the minimum analysis guaranteed in respect of the principal fertilising ingredients.

In the case of Feeding-Stuffs—

- (1.) the name of the article;
- (2.) the description of the article: whether it has been made from one substance or seed only, or from more than one.

(NOTE.—The use of the terms "Linseed-cake," "Cotton-cake," &c., implies that these cakes shall be "pure," and purchasers are recommended to insist upon these terms being used without any qualification such as "95 per cent.," "as imported," &c. "Oil-cake" should be avoided. Mixed feeding-cakes and meals should be only purchased with a guaranteed analysis.)

Members of the Society should see that the *Invoices* agree accurately with the orders given by them, and, in giving these orders, they should stipulate that the goods come up to the guarantees set out in the following list, and that they be sold subject to the analysis and report of the Consulting Chemist of the Bath and West and Southern Counties Society.

FERTILISERS.

Raw Bones, Bone-meal, or Bone-dust to be guaranteed "PURE," and to contain not less than 45 per cent. of Phosphate of Lime, and not less than 4 per cent. of Ammonia.

Steamed or "Degelatinised" Bones to be guaranteed "PURE," and to contain not less than 55 per cent. of Phosphate of Lime, and not less than 1 per cent. of Ammonia.

Mineral Superphosphate of Lime to be guaranteed to contain a certain percentage of "Soluble Phosphate." [From 25 to 28 per cent. of Soluble Phosphate is an ordinarily good quality.]

Dissolved Bones to be guaranteed to be "made from raw bone and acid only," and to be sold as containing stated minimum percentages of Soluble Phosphate, Insoluble Phosphates, and Ammonia.

Compound Artificial Manures, Bone Manures, Bone Compounds, &c., to be sold by analysis stating the minimum percentages of Soluble Phosphate, Insoluble Phosphates, and Ammonia contained.

Basic Slag to be guaranteed to contain a certain percentage of Phosphoric Acid, and to be sufficiently finely ground that 80 to 90 per cent. passes through a sieve having 10,000 meshes to the square inch.

Peruvian Guano to be described by that name, and to be sold by analysis stating the minimum percentages of Phosphates and Ammonia.

Sulphate of Ammonia to be guaranteed to be "PURE," and to contain not less than 24 per cent. of Ammonia.

Nitrate of Soda to be guaranteed to be "PURE" and to contain 95 per cent. of Nitrate of Soda.

Kainit to be guaranteed to contain 23 per cent. of Sulphate of Potash.

All Fertilisers to be delivered in good and suitable condition for sowing.

FEEDING-STUFFS.

Linseed Cake, Cotton Cake (Decorticated and Undecorticated), and **Rape Cake** (for feeding purposes) to be pure, i.e. prepared *only* from the one kind of seed from which their name is derived, and to be in sound condition. The report of the Consulting Chemist of the Bath and West and Southern Counties Society to be conclusive as to the "purity" or otherwise of any feeding-stuffs.

Mixed Feeding Cakes, Meals, &c., to be sold on a guaranteed analysis.

All Feeding-Stuffs to be sold in sound condition, and to contain nothing of an injurious nature, or worthless for feeding purposes.

INSTRUCTIONS FOR SELECTING AND SENDING SAMPLES FOR ANALYSIS.

GENERAL RULES.

1.—A sample taken for analysis should be fairly *representative* of the bulk from which it has been drawn.

2.—The sample should reach the Analyst in the *same condition* as it was at the time when drawn.

FERTILISERS

When **Fertilisers** are delivered in bags, select four or five of these from the bulk, and either turn them out on a floor and rapidly mix their contents, or else drive a shovel into each bag and draw out from as near the centre as possible a couple of shovelfuls of the manure, and mix these quickly on a floor.

Halve the heap obtained in either of these ways, take one-half (rejecting the other) and mix again rapidly, flattening down with the shovel any lumps that appear. Repeat this operation until at last only some three or four pounds are left.

From this fill three tins, holding from $\frac{1}{2}$ -lb. to 1-lb. each, mark, fasten up and seal each of these. Send one for analysis, and retain the others for reference.

Or,—the manure may be put into glass bottles provided with well-fitting corks; the bottles should be labelled and the corks sealed down. The sample sent for analysis can be packed in a wooden box and sent by post or rail.

When manures are delivered in bulk, portions should be successively drawn from *different parts* of the bulk, the heap being turned over now and again. The portions drawn should be thoroughly mixed, sub-divided, and, finally, samples should be taken as before, except that when the manure is coarse and bulky it is advisable to send larger samples than when it is in a finely-divided condition.

FEEDING-STUFFS.

Linseed, Cotton, and other Feeding Cakes.—If a single cake be taken, three strips should be broken off right across the cake and from the middle portion of it, one piece to be sent for analysis, and the other two retained for reference. Each of the three pieces should be marked, wrapped in paper, fastened up and sealed. The piece forwarded for analysis can be sent by post or rail.

A more satisfactory plan is to select four to six cakes from different parts of

the delivery, then break off a piece about four inches wide from the middle of each cake, and pass these pieces through a cake-breaker. The broken cake should then be well mixed, and three samples of about 1 lb. each should be taken and put in tins or bags duly marked, fastened, and sealed as before. One of these lots should be sent for analysis, the remaining two being kept for reference. It is advisable, also, with the broken pieces to send a small strip from an unbroken cake.

Feeding Meals, Grain, &c.—Handfuls should be drawn from the centre of half-a-dozen different bags of the delivery; these lots should then be well mixed, and three $\frac{1}{2}$ -lb. tins or bags filled from the heap, each being marked, fastened up, and sealed. One sample is to be forwarded for analysis and the others retained for reference.

SOILS, WATERS, &c.

Soils.—Have a wooden box made 6 inches in length and width, and from 9 to 12 inches deep, according to the depth of soil and subsoil of the field. Mark out in the field a space of about 12 inches square; dig round in a slanting direction a trench, so as to leave undisturbed a block of soil and its subsoil 9 to 12 inches deep; trim this block to make it fit into the wooden box, invert the open box over it, press down firmly, then pass a spade under the box and lift it up, gently turn over the box, nail on the lid, and send by rail. The soil will then be received in the position in which it is found in the field.

In the case of very light, sandy, and porous soils, the wooden box may be at once inverted over the soil and forced down by pressure, and then dug out.

Waters.—Samples of water are best sent in glass-stoppered Winchester bottles, holding half-a-gallon. One such bottle is sufficient for a single sample. Care should be taken to have these scrupulously clean. In taking a sample of water for analysis it is advisable to reject the first portion drawn or pumped, so as to obtain a sample of the water when in ordinary flow. The bottle should be rinsed out with the water that is to be analysed, and it should be filled nearly to the top. The stopper should be secured with string, or be tied over with linen or soft leather. The sample can then be sent carefully packed either in a wooden box with sawdust, &c., or in a hamper with straw.

Milk.—A pint bottle should be sent in a wooden box.

GENERAL INSTRUCTIONS.

Time for Taking Samples.—All samples, both of fertilisers and feeding-stuffs, should be taken as soon after their delivery as possible, and should reach the Analyst within *ten days* after delivery of the article. In every case it is advisable that the Analyst's certificate be received before a fertiliser is sown or a feeding-stuff is given to stock.

Procedure in the Event of the Vendor wishing Fresh Samples to be Drawn.—Should a purchaser find that the Analyst's certificate shows a fertiliser or feeding-stuff not to come up to the guarantee given him, he may inform the vendor of the result and complain accordingly. He should then send to the vendor *one* of the two samples which he has kept for reference. If, however, the vendor should demand that a fresh sample be drawn, the purchaser must allow this, and also give the vendor an opportunity of being present, either in person or through a representative whom he may appoint. In that case, three samples should be taken in the presence of both parties with the same precautions as before described, *each* of which should be duly packed up, labelled, and sealed by both parties. One of these is to be given to the vendor, one is to be sent to the Analyst, and the third is to be kept by the purchaser for reference or future analysis if necessary.

All samples intended for the Consulting Chemist of the Society should be addressed (postage or carriage prepaid) to Dr. J. AUGUSTUS VOELCKER, M.A., F.I.C., 22, Tudor Street, New Bridge Street, London, E.C. Separate letters of instruction should be sent at the same time.

BRISTOL MEETING,

MAY 27, 28, 29, 30, AND JUNE 1, 1903.

MONEY PRIZES.

	£	s.	d.	PAGE
HORSES	1,117	0	0	xciii
CATTLE	1,204	0	0	c
SHEEP	428	10	0	cv
PIGS	245	0	0	cvi
CIDER	20	0	0	cvii
CHEESE	116	0	0	cviii
BUTTER AND CREAM	59	10	0	cviii
BUTTER-MAKING	40	0	0	cix
MILKING	11	5	0	cx
SHOEING	35	0	0	cx
POULTRY	161	10	0	cxix
Total	£3,437	15	0	

DONORS OF MONEY PRIZES.

	£	s.	d.
Bath and West and Southern Counties Society	2,687	5	0
Bristol Local Committee	434	0	0
Society of Merchant Venturers, Bristol	50	0	0
Shire Horse Society	5	0	0
Polo and Riding Pony Society	50	0	0
W. A. Pillers, Esq., and others	13	0	0
Lord Tredegar	12	0	0
Welsh Pony and Cob Society	12	0	0
J. O. Muntz, Esq.	5	0	0
H. Wiseman, Esq.	5	0	0
S. M. Wilmot, Esq.	5	0	0
Plymouth Local Committee	25	0	0
South Devon Herd Book Society	15	0	0
James Inskip, Esq.	21	0	0
Shorthorn Society	10	0	0
English Aberdeen-Angus Cattle Association ..	10	0	0
English Jersey Cattle Society	31	0	0
English Guernsey Cattle Society	2	0	0
Oxford Down Sheep Breeders' Association ..	10	0	0
W. R. Flower, Esq.	10	10	0
British Berkshire Society	5	0	0
Large Black Pig Society	20	0	0
	£3,437	15	0

DONORS OF MEDALS AND PLATE

In addition to the Money Prizes, there are offered:—

- A GOLD MEDAL, in the Shire Horse Classes, by the Shire Horse Society.
- A GOLD and 3 SILVER MEDALS, in the Hunter Classes, by the Hunters' Improvement Society.
- A GOLD MEDAL, in the Hackney Classes, and a GOLD MEDAL in the Harness Classes, by the Hackney Horse Society.
- FOUR SILVER and 1 BRONZE MEDAL in the Polo Pony and Bending Classes, by the Polo and Riding Pony Society.
- A CHALLENGE CUP, value £52 10s., in the South Devon Classes, by the town of Devonport.
- A GOLD MEDAL, in the Aberdeen Angus Classes, by the Polled Cattle Society.
- A CHALLENGE SILVER BOWL, in the Jersey Classes, by Sir James Blyth, Bart.
- A GOLD, a SILVER, and a BRONZE MEDAL, in the Butter Test Classes, by the English Jersey Cattle Society.
- A SILVER CUP, and a SILVER, and a BRONZE MEDAL, in the Guernsey Butter Test Class, by the English Guernsey Cattle Society.
- TWO CHALLENGE CUPS, value 25 Guineas each, in the Kerry and Dexter Classes, by B. de Bertodano, Esq.
- TWO SILVER MEDALS, in the Southdown Sheep Classes, by the Southdown Sheep Society.
- TWO SILVER MEDALS, in the Pig Classes, by the National Pig Breeders' Association.
- TWENTY SILVER and 20 BRONZE MEDALS, in the Cider Classes, by the Society.
- A GOLD, a SILVER, and a BRONZE MEDAL, in the Butter-Making Classes, by the Society.

PRIZES.

HORSES.		First Prize.	Second Prize.	Third Prize.
		£	£	£
<i>An Animal can be entered in as many Classes as it is eligible for on payment of an additional fee in each Class. No additional fee is, however, payable in the case of those Prizes headed as Champion or Special Prizes.</i>				
SHIRE.				
(Registered or eligible for registration in the Shire Horse Society's Stud Book.)				
CLASS				
1.—	STALLION, foaled before 1901	15	10	3
2.—	STALLION, foaled in 1901	15	10	3
3.—	COLT, foaled in 1902	15	10	3
4.—	MARE and FOAL, or in-FOAL	15	10	3

HORSES— <i>continued.</i>		First Prize.	Second Prize.	Third Prize.
		£	£	£
The Prize in Class 5 is offered by the Society of Merchant Venturers, Bristol.				
CLASS				
*5.—Brood Mare, with 2 of her Progeny, the property of a bonâ fide Farmer, whose sole occupation is farming within a radius of 50 miles of Bristol. The Mare and Sire or Sires of Progeny to be Registered in the Shire Horse Society's Stud Book (Cup or Money)		50		
6.—FILLY or GELDING, foaled in 1900		10	5	3
7.—FILLY or GELDING, foaled in 1901		10	5	3
8.—FILLY or GELDING, foaled in 1902		10	5	3
SPECIAL PRIZE.				
Offered by the Shire Horse Society, a Gold Medal, value £10, for Best Mare or Filly in Class 4, 5, 6, 7, or 8, under Conditions 46, and to the Breeder of the winner under the Conditions stated, a Prize of		5		
ANY AGRICULTURAL HORSES.				
*9.—Mare or Gelding, not under 4 years old, suitable for town purposes, the bonâ fide property of a Tenant Farmer, whose sole occupation is farming, and whose farm is situate within 25 miles of the Guildhall, Bristol		10	5	3
*10.—Filly or Gelding, foaled in 1901, the owner being the Breeder and residing within 25 miles of the Guildhall, Bristol		10	5	3
*11.—Filly, Colt, or Gelding, foaled in 1902, the owner being the Breeder and residing within 25 miles of the Guildhall, Bristol		10	5	3
ANY AGRICULTURAL HORSES OTHER THAN REGISTERED SHIRES.				
12.—MARE and FOAL, or in-FOAL		10	5	3
HUNTERS.				
13.—MARE and FOAL, or in-FOAL		15	10	3
*14.—Mare or Gelding, foaled before 1899		20	10	5
*15.—Mare or Gelding, foaled before 1899, the owner residing within 25 miles of the Guildhall, Bristol		20	10	5
16.—MARE or GELDING, foaled in 1899		15	10	3

* The Prizes in the Classes marked with an asterisk (*) are offered by or through the Bristol Local Committee.

HORSES— <i>continued</i> .			
CLASS	First Prize.	Second Prize.	Third Prize.
17.—FILLY or GELDING, foaled in 1900	£ 15	£ 10	£ 3
18.—FILLY or GELDING, foaled in 1901	10	5	3
19.—FILLY, COLT, or GELDING, foaled in 1902	10	5	3
SPECIAL PRIZES.			
(Offered by the Bristol Local Committee.)			
*Best Exhibit in Class 16 or 17, the owner residing within 25 miles of the Guildhall, Bristol	20		
*Best Exhibit in Class 18 or 19, the owner being the Breeder and residing within 25 miles of the Guildhall, Bristol	10		
(Offered by the Hunters' Improvement Society.)			
A Gold Medal, or £5 and a Bronze Medal, for the Best Hunter Brood Mare (by a Thoroughbred or Registered Hunter Sire, and in-Foal to, or with Foal at-foot by, a Sire of similar breeding) in Class 13, not having previously won the Hunters' Improvement Society's Gold Medal as a Brood Mare in 1903, under Conditions 47. Prize winners in the class only will be eligible for the Medal.			
A Silver Medal, for the Best Hunter Filly by a Thoroughbred Horse or Registered Hunter Sire in Class 17, 18, or 19, not exceeding three years old (foaled in 1900, 1901, or 1902), under Conditions 48. Prize winners in these classes only will be eligible for the Medal.			
A Silver Medal, for the Best Hunter Mare or Gelding of any Age, not having previously won the Society's Silver Medal under this scheme in 1903, bred by a Thoroughbred or Registered Hunter Sire out of a Registered Mare or a Mare qualified for Registration in the next volume, under Conditions 49. Prize winners in the classes only will be eligible for the Medal.			
A Silver Medal, for the Best Yearling Hunter Colt by a Thoroughbred or Registered Hunter Sire out of a Mare registered in the Hunter Stud Book, or entered for the next volume, exhibited in Class 19, and not having previously won the Society's Silver Medal under this scheme in 1903, under Condition 50. Prize winners in the class only will be eligible for the Medal.			

* The Prizes in the Classes marked with an asterisk (*) are offered by or through the Bristol Local Committee.

HORSES—continued.			
	First Prize.	Second Prize.	Third Prize.
	£	£	£
HACKNEYS.			
(Classes 20 to 24 are for Horses registered or eligible for registration in the Hackney Horse Society's Stud Book.)			
CLASS			
20.—MARE and FOAL, or in-FOAL	15	10	3
21.—MARE or GELDING, foaled before 1899	10	5	3
22.—MARE or GELDING, foaled in 1899 or 1900	10	5	3
23.—FILLY or GELDING, foaled in 1901	10	5	3
24.—FILLY, COLT, or GELDING, foaled in 1902	10	5	3
SPECIAL PRIZE.			
(Offered by the Hackney Horse Society.)			
A Gold Medal (value £10) for the Best Mare or Filly exhibited in Classes 20 to 24, under Conditions 51.			
POLO, RIDING, AND MOUNTAIN PONIES.			
(Of the Prizes offered in Classes 25 to 41, £50 is contributed by the Polo and Riding Pony Society; £12 by the Welsh Pony and Cob Society; £12 by Lord Tredegar; £5 by J. O. Muntz, Esq.; £5 by H. Wiseman, Esq.; £5 by S. M. Wilmot, Esq., and £13 by W. A. Pillers, Esq., and other gentlemen interested in the district of Bristol.)			
25.—STALLION, above 13·2 and not exceeding 14·2 hands, suitable to get Polo or Riding Ponies	6	4	2
26.—STALLION, not exceeding 13·2 hands, suitable to get Polo or Riding Ponies	6	4	2
27.—WELSH MOUNTAIN STALLION, not exceeding 12·2 hands, entered previous or subsequent to exhibition in Section A of the Welsh Pony and Cob Society's Stud Book	6	4	2
28.—MARE, above 13·2, and not exceeding 14·2 hands, suitable to breed Polo or Riding Ponies, in-foal to, or with foal at-foot by, a Thoroughbred, Arab, Registered, or entered Sire	6	4	2
29.—MARE, not exceeding 13·2 hands, suitable to breed Polo or Riding Ponies, in-foal to, or with foal at-foot by, a Thoroughbred, Arab, Registered, or entered Sire	6	4	2
30.—MOUNTAIN or MOORLAND PONY MARE, not exceeding 13 hands, suitable to breed Polo or Riding Ponies, in-foal or with foal at-foot	6	4	2

CLASS	HORSES— <i>continued</i> .	First Prize.	Second Prize.	Third Prize.
		£	£	£
31.—	WELSH MOUNTAIN MARE, barren or in-foal, not exceeding 12·2 hands, entered previous or subsequent to exhibition in Section A of the Welsh Pony and Cob Society's Stud Book	6	4	2
32.—	MARE, STALLION, or GELDING, foaled before 1899, that has been used for Playing Polo and is Registered at Hurlingham.	6	4	2
33.—	MARE, STALLION, or GELDING, foaled before 1900, not exceeding 14·2 hands, never having been played in a Polo Match or Club game	6	4	2
34.—	FILLY, COLT, or GELDING, foaled in 1900, not exceeding 14·1 hands.	6	4	2
35.—	FILLY, COLT, or GELDING, foaled in 1901, not exceeding 14 hands	6	4	2
36.—	FILLY, COLT, or GELDING, foaled in 1902, not exceeding 13·2 hands.	6	4	2

BENDING COMPETITIONS.

Competitors in Classes 37 to 41 will have to go once up and down 11 posts 8 yards apart in accordance with the Polo and Riding Pony Society's Bending Rules. Exhibitors must enter in each of the Classes 37 to 40, but winners of a 1st Prize in any Class cannot again compete, and entrance fees paid for such will be refunded in accordance with this.

Ponies entered in other Classes can, if eligible, be also entered, on payment of an additional fee, in the Bending Classes.

Ponies entered in the Bending Classes only and not having a box in the Yard, must be in the Show Yard by 2 P.M. on the day on which they compete, and, with the consent of the Stewards, may leave the Yard as soon as the Class has been judged.

37.—	MARE, STALLION, or GELDING, over 14 and not exceeding 14·2 hands, on the 1st day of the Show	5		
38.—	MARE, STALLION, or GELDING, over 14 and not exceeding 14·2 hands, on the 2nd day of the Show	5		
39.—	MARE, STALLION, or GELDING, over 14 and not exceeding 14·2 hands, on the 3rd day of the Show	5		
40.—	MARE, STALLION, or GELDING, over 14 and not exceeding 14·2 hands, on the 4th day of the Show	5		
(There is no Entrance Fee in Class 41.)				
41.—	CHAMPION BENDING COMPETITION. On the 5th day of Show. The winners in Classes 37, 38, 39, and 40 will compete for the Polo and Riding Pony Society's Bronze Medal.			

HORSES— <i>continued</i> .			
	First Prize.	Second Prize.	Third Prize.
	£	£	£
(Special Prizes offered by the Polo and Riding Pony Society.)			
A Silver Medal for the Best Polo Pony Brood Mare, registered or eligible for registration in the Stud Book.			
A Silver Medal for the Best Polo Pony Mare, to be shown in hand, registered or eligible for registration in the Stud Book.			
A Silver Medal for the Best Polo Pony, Filly, one two, or three years old, to be shown in hand.			
A Silver Medal for the Best Polo Pony Stallion, registered or eligible for registration in the Stud Book; or Best Polo Pony Entire Colt, one, two, or three years old.			
These Medals are offered subject to Conditions No. 52.			
HARNESS.			
(£130 towards the Prizes in the Harness and Jumping Classes is contributed by the Bristol Local Committee.)			
Horses entered in the other Classes can, if eligible, be also entered, on payment of an additional fee, in the Harness Classes.			
Horses entered in the Double Harness and Tandem Classes can also be entered, on payment of an additional fee, in the Single Harness Classes.			
Horses entered in the Harness Classes only, and not having a box in the Yard, must be in the Show Yard by 2 p.m. on the day on which they compete, and, with the consent of the Stewards, may leave the Yard as soon as the Class has been judged.			
CLASS			
42.—MARE or GELDING, not over 14·2 hands, to be driven in harness on the 1st day of Show	10	5	2
43.—TANDEMS (Mares or Geldings), to be driven in harness on the 1st day of Show	10	5	2
44.—MARE or GELDING, 15 hands or over, to be driven in harness on the 2nd day of Show	10	5	2
45.—PAIR of CARRIAGE HORSES (Mares or Geldings), to be driven in double harness on the 2nd day of Show	10	5	2
46.—MARE or GELDING, over 14·2 and under 15 hands, to be driven in harness on the 3rd day of Show	10	5	2
47.—TROTting. Best MARE or GELDING, under 15 hands, for speed and action, to be driven in harness on the 3rd day of Show	10	5	2
48.—PONY, MARE, or GELDING, not over 13·2 hands, to be driven in harness on the 4th day of Show	10	5	2
49.—TROTting. Best MARE or GELDING, 15 hands or over, for speed and action, to be driven in harness on the 4th day of Show	10	5	2

HORSES— <i>continued.</i>		First Prize.	Second Prize.	Third Prize.
		£	£	£
(Special Prize offered by the Hackney Horse Society.)				
A Gold Medal (value £5) for the Best Mare or Gelding exhibited in Single Harness in Classes 42 to 49, subject to Conditions 51a.				
TRADESMEN'S CLASSES.				
CLASS				
50.—LIGHT MARE or GELDING, the property of a Tradesman residing within a radius of four miles from the Guildhall, Bristol, used solely by him for trade purposes for a period of not less than three months prior to May 27, 1903, to be exhibited on the 5th day of the Show in the Trade Cart and Harness in which it has been worked for the same period				
	10	5	2	
51.—CART MARE or GELDING, the property of a Tradesman residing within a radius of four miles from the Guildhall, Bristol, used solely by him for trade purposes for a period of not less than three months prior to May 27, 1903, to be exhibited on the 5th day of the Show, in the Trade Cart and Harness in which it has been worked for the same period				
	10	5	2	
JUMPING.				
(For Regulations as to Jumping Classes, see Conditions 53 on page cxvii.)				
Horses can be entered in as many Jumping Classes as they are eligible for on payment of the entry fee for each Class, but cannot take more than one First Prize.				
Horses entered in the Jumping Classes only, and not having a box in the Yard, must be in the Show Yard by 2 P.M. on the day on which they compete and, with the consent of the Stewards, may leave the Yard as soon as the Class has been judged.				
52.—MARE or GELDING, over 15·2 hands, that shall jump in the best form on the 1st day of the Show				
	10	5	2	
53.—MARE or GELDING, not over 15·2 hands, that shall jump in the best form on the 1st day of the Show				
	10	5	2	
54.—MARE or GELDING, over 14·2 hands, that shall jump in the best form on the 2nd day of the Show				
	10	5	2	
55.—MARE or GELDING, not over 14·2 hands, that shall jump in the best form on the 2nd day of the Show				
	10	5	2	
56.—MARE or GELDING, over 15 hands, that shall jump in the best form on the 3rd day of the Show				
	10	5	2	

HORSES— <i>continued.</i>			
CLASS	First Prize.	Second Prize.	Third Prize.
	£	£	£
57.—MARE or GELDING, not over 15 hands, that shall jump in the best form on the 3rd day of the Show	10	5	2
58.—MARE or GELDING, over 14·2 hands, that shall jump in the best form on the 4th day of the Show	10	5	2
59.—MARE or GELDING, not over 14·2 hands, that shall jump in the best form on the 4th day of the Show	10	5	2
60.—MARE or GELDING, over 14 hands, that shall jump in the best form on the 5th day of the Show	10	5	2
61.—MARE or GELDING, not over 14 hands, that shall jump in the best form on the 5th day of the Show	10	5	2
CATTLE.			
DEVON.			
62.—BULL, calved in 1899 or 1900	10	5	2
63.—BULL, calved in 1901	10	5	2
64.—BULL, calved in 1902	10	5	2
65.—Cow, in-Milk, calved before 1900	10	5	2
66.—HEIFER, in-Milk, calved in 1900	10	5	2
67.—HEIFER, calved in 1901	10	5	2
68.—HEIFER, calved in 1902	10	5	2
SOUTH DEVON.			
(£25 of the amount offered in the South Devon Classes is contributed by the Plymouth (1903) Local Committee and £15 by the South Devon Herd Book Society.)			
69.—BULL, calved in 1899 or 1900	10	5	2
70.—BULL, calved in 1901	10	5	2
71.—BULL, calved in 1902	10	5	2
72.—Cow, in-Milk, calved before 1900	10	5	2
73.—HEIFER, in-Milk, calved in 1900	10	5	2
74.—HEIFER, calved in 1901	10	5	2
75.—HEIFER, calved in 1902	10	5	2
CHAMPION PRIZE.			
(Offered by the Town of Devonport.)			
"The Devonport Challenge Cup" (value £52 10s.) for the Best Bullock (Bull, Cow, or Heifer) in the South Devon Classes. The Cup to be won two years in succession or three years at intervals, before becoming the absolute property of the winner.			

CATTLE— <i>continued.</i>		First Prize.	Second Prize.	Third Prize.
CLASS	SHORTHORN.	£ s.	£	£
76.—BULL, calved in 1899 or 1900		10	5	2
77.—BULL, calved in 1901		10	5	2
78.—BULL, calved in 1902		10	5	2
<i>(An Animal entered in Class 76 or 77 can, if eligible, be also entered in Class 79 on payment of an additional fee.)</i>				
<i>(The Prize in Class 79 is offered by James Inskip, Esq.)</i>				
79.—Bull, not less than 2 years old, to which a First or Second Prize was awarded in 1901 or 1902		10 10		
80.—Cow, in-Milk, calved before 1900		10	5	2
81.—HEIFER, in-Milk, calved in 1900		10	5	2
82.—HEIFER, calved in 1901		10	5	2
83.—HEIFER, calved in 1902		10	5	2
<i>(An animal entered in Class 80, 81, or 82, can, if eligible, be also entered in Class 84 on payment of an additional fee.)</i>				
<i>(The Prize in Class 84 is offered by James Inskip, Esq.)</i>				
84.—Cow or Heifer, not less than 2 years old, to which a First or Second Prize was awarded in 1901 and 1902		10 10		
CHAMPION PRIZE.				
<i>(Offered by the Shorthorn Society.)</i>				
Best Bull in Class 76, 77, 78, or 79, entered in or eligible for Coate's Herd Book		10		
HEREFORD.				
85.—BULL, calved in 1899 or 1900		10	5	2
86.—BULL, calved in 1901		10	5	2
87.—BULL, calved in 1902		10	5	2
88.—Cow, in-Milk, calved before 1900		10	5	2
89.—HEIFER, in-Milk, calved in 1900		10	5	2
90.—HEIFER, calved in 1901		10	5	2
91.—HEIFER, calved in 1902		10	5	2
SUSSEX.				
92.—BULL, calved in 1899 or 1900		10	5	2
93.—BULL, calved in 1901 or 1902		10	5	2
94.—Cow or HEIFER, in-Milk, calved in or before 1900		10	5	2
95.—HEIFER, calved in 1901		10	5	2
96.—HEIFER, calved in 1902		10	5	2
ABERDEEN-ANGUS.				
<i>(The First Prize in Class 97 is offered by the English Aberdeen-Angus Cattle Association.)</i>				
97.—BULL, calved before 1st December, 1901		10	5	2
98.—BULL, calved on or after 1st December, 1901		10	5	2

CATTLE— <i>continued.</i>			
CLASS	First Price.	Second Price.	Third Price.
99.—COW or HEIFER, in-Milk, calved before 1st December, 1900	£ 10	£ 5	£ 2
100.—HEIFER, calved on or after 1st December, 1900	10	5	2
101.—HEIFER, calved on or after 1st December, 1901	10	5	2
CHAMPION PRIZE.			
(Offered by the Polled Cattle Society.)			
A Gold Medal for the Best Breeding Animal in Classes 97 to 101.			
JERSEY.			
102.—BULL, calved in 1899 or 1900	10	5	2
103.—BULL, calved in 1901	10	5	2
104.—BULL, calved in 1902	10	5	2
105.—COW, in-Milk, calved before 1900	10	5	2
106.—HEIFER, in-Milk, calved in 1900	10	5	2
107.—HEIFER, calved in 1901	10	5	2
108.—HEIFER, calved in 1902	10	5	2
SPECIAL PRIZE.			
(Offered by Sir James Blyth, Bart.)			
The Blythwood Challenge Silver Bowl, weighing 25 ounces, for the Best Cow or Heifer, in-Milk, in any of the Jersey Classes, bred in Great Britain or Ireland, to be awarded by inspection (see Special Conditions 62).			
GUERNSEY.			
109.—BULL, calved in 1899 or 1900	10	5	2
110.—BULL, calved in 1901	10	5	2
111.—BULL, calved in 1902	10	5	2
112.—COW, in-Milk, calved before 1900	10	5	2
113.—HEIFER, in-Milk, calved in 1900	10	5	2
114.—HEIFER, calved in 1901	10	5	2
115.—HEIFER, calved in 1902	10	5	2
KERRY.			
116.—BULL, calved in 1900, 1901, or 1902	10	5	2
117.—COW or HEIFER, in-Milk, calved in or before 1899	10	5	2
118.—HEIFER, calved in 1901 or 1902	10	5	2
SPECIAL PRIZE.			
(Offered by B. de Bertodano, Esq.)			
For Best Animal to which the Cup has not previously been awarded in Class 116, 117, or 118.			
The Bertodano Challenge Cup, value 25 Guineas. The Cup to become the property of an Exhibitor winning it three years in succession.			

CATTLE— <i>continued.</i>		First Prize.	Second Prize.	Third Prize.
CLASS	DEXTER KERRY.	£	£	£
119.—	BULL, calved in 1900, 1901, or 1902	10	5	2
120.—	Cow or HEIFER, in-Milk, calved in or before 1900	10	5	2
121.—	HEIFER, calved in 1901 or 1902	10	5	2
SPECIAL PRIZE.				
(Offered by B. de Bertodano, Esq.)				
For Best Animal to which the Cup has not previously been awarded in Class 119, 120, or 121				
The Bertodano Challenge Cup, value 25 Guineas. The Cup to become the property of an Exhibitor winning it three years in succession.				
DAIRY.				
<i>Animals entered in the Breed Classes can, if eligible, be entered also, on payment of the additional fee, in Classes 122 to 127.</i>				
122.—	Cow, in-Milk, of any breed or cross, under 900 lbs. live weight, yielding the largest quantity of Milk, of normal character, containing, on the average of the two competitive milkings, 12 per cent. of total solids, of which not less than 3·25 per cent. shall be fat, the period of lactation being taken into consideration	10	5	2
123.—	Cow, in-Milk, of any breed or cross, 900 lbs. live weight or over ditto ditto	10	5	2
*SPECIAL PRIZE.				
(Offered by Bristol Local Committee.)				
*Best Exhibit in Class 123, the property of a bona fide Tenant Farmer residing within 25 miles of the Guildhall, Bristol				
*124.—Cow, in-Milk, to be judged by inspection, having regard to Milking qualities, the property of a Resident within 25 miles of the Guildhall, Bristol				
BUTTER TEST.				
The Prizes in Classes 125 and 126 are offered by the English Jersey Cattle Society, and entries in them are subject to any conditions issued by that Society previous to the Tests.				

* The Prizes in the Classes marked with an asterisk (*) are offered by or through the Bristol Local Committee.

CATTLE— <i>continued</i> .		First Prize.	Second Prize.	Third Prize.
CLASS		£	£	£
125.—Cow, of any breed or cross, under 900 lbs. live weight, obtaining the greatest number of points by the practical Test of the Separator and Churn, judged by the scale of points adopted by the English Jersey Cattle Society		10	3	2
126.—Cow of any breed or cross, 900 lbs. live weight and over ditto ditto		10	3	3
Gold, Silver, and Bronze Medals are offered for the three Jersey Cows, entered or eligible for entry in the English Jersey Herd Book, obtaining the greatest number of points in the Test, and Certificates of Merit will be granted to Jersey Cows, not being Prize winners, entered or eligible for entry in the Herd Book, under 5 years old, obtaining 30 points; 5 years old and over obtaining 35 points.				
SPECIAL PRIZE.				
For the Best quality of Butter produced by any Jersey Cow awarded a Medal, Prize, or Certificate of Merit in Class 125 or 126	1			
(The Prizes in Class 127 are offered by the English Guernsey Cattle Society.)				
127.—Guernsey Cow or Heifer, entered in the English Guernsey Cattle Society's Herd Book, or eligible for entry therein, obtaining the greatest number of points by the practical Test of the Churn, the points to be reckoned on the weight of Butter and an allowance for lactation to be made under the scale settled by the English Guernsey Society.				
1st Prize, Silver Cup, value £5.				
2nd „ Silver Medal and 20s.			1	
3rd „ Bronze Medal and 20s.				1
DAIRY HERDS.				
(Offered by Bristol Local Committee.)				
*A.—Herd of not less than 30 Dairy Cows, the property of a bonâ fide Tenant Farmer residing within 25 miles of the Guildhall, Bristol	25	10		5
*B.—Herd of over 15 and under 30 Dairy Cows, the property of a bonâ fide Tenant Farmer residing within 25 miles of the Guildhall, Bristol	20	10		5
Exhibits in Classes A and B will be judged on the farm to which they belong.				

* The Prizes in the Classes marked with an asterisk (*) are offered by or through the Bristol Local Committee.

Prizes for Sheep, &c., for 1903.

CV

S H E E P.		First Prize.	Second Prize.	Th'rd Prize.
CLASS	COTSWOLD.	£ s.	£	£
128.—	Shearling RAM	10	5	2
129.—	Pair of RAM LAMBS, dropped in 1903	10	5	2
130.—	Pen of three Shearling EWES	10	5	2
DEVON LONG-WOOLLED.				
131.—	Shearling RAM	10	5	2
132.—	Pair of RAM LAMBS, dropped in 1903	10	5	2
133.—	Pen of three Shearling EWES	10	5	2
SOUTHDOWN.				
134.—	Shearling RAM	10	5	2
135.—	Pair of RAM LAMBS, dropped in 1903	10	5	2
136.—	Pen of three Shearling EWES	10	5	2
SPECIAL PRIZES.				
(Offered by the Southdown Sheep Society, under Conditions No. 66.)				
A Silver Medal for the Best Ram or Ram Lamb in Class 134 or 135.				
A Silver Medal for the Best Pen of Ewes in Class 136.				
HAMPSHIRE DOWN.				
137.—	Shearling RAM	10	5	2
138.—	Pair of RAM LAMBS, dropped in 1903	10	5	2
139.—	Pen of three Shearling EWES	10	5	2
SHROPSHIRE.				
140.—	Shearling RAM	10	5	2
141.—	Pair of RAM LAMBS, dropped in 1903	10	5	2
142.—	Pen of three Shearling EWES	10	5	2
OXFORD DOWN.				
143.—	Shearling RAM	10	5	2
144.—	Pair of RAM LAMBS, dropped in 1903	10	5	2
145.—	Pen of three Shearling EWES	10	5	2
(The Prizes in Class 146 are offered by the Oxford Down Sheep Breeders' Association.)				
146.—	Pen of three Ewe Lambs, dropped in 1903	6	3	1
MOUNTAIN.				
147.—	Shearling RAM	10	5	2
148.—	Pair of RAM LAMBS, dropped in 1903	10	5	2
149.—	Pen of three Shearling EWES	10	5	2
SOMERSET AND DORSET HORNED.				
150.—	Shearling RAM	10	5	2
151.—	Pair of RAM LAMBS, dropped after November 1st, 1902	10	5	2
152.—	Pen of three Shearling EWES	10	5	2
CHAMPION PRIZE.				
(Offered by W. R. Flower, Esq.)				
Best Exhibit in Class 150, 151, or 152		10 10		

P I G S.		First Prize.	Second Prize.	Third Prize.
CLASS	BERKSHIRE.	£	£	£
153.—BOAR, farrowed in 1900, 1901, or 1902 . .		7	3	2
154.—Pair of BOARS, farrowed in 1903 . . .		5	2	1
155.—Breeding Sow, farrowed before 1903 . . .		7	3	2
156.—Pair of Breeding Sows, farrowed in 1903 . .		5	2	1
SPECIAL PRIZE.				
(Offered by the British Berkshire Society.)				
Best Boar or Sow in the Berkshire Classes entered in, or eligible for, the Herd Book		5		
LARGE BLACK.				
<i>(£20 of the amount offered in Prizes in Classes 157 to 160 is contributed by the Large Black Pig Society.)</i>				
157.—BOAR, farrowed in 1900, 1901, or 1902 . .		7	3	2
158.—Pair of BOARS, farrowed in 1903 . . .		5	2	1
159.—Breeding Sow, farrowed before 1903 . . .		7	3	2
160.—Pair of Breeding Sows, farrowed in 1903 . .		5	2	1
LARGE WHITE.				
161.—BOAR, farrowed in 1900, 1901, or 1902 . .		7	3	2
162.—Pair of BOARS, farrowed in 1903 . . .		5	2	1
163.—Breeding Sow, farrowed before 1903 . . .		7	3	2
164.—Pair of Breeding Sows, farrowed in 1903 . .		5	2	1
MIDDLE WHITE.				
165.—BOAR, farrowed in 1900, 1901, or 1902 . .		7	3	2
166.—Pair of BOARS, farrowed in 1903 . . .		5	2	1
167.—Breeding Sow, farrowed before 1903 . . .		7	3	2
168.—Pair of Breeding Sows, farrowed in 1903 . .		5	2	1
SMALL WHITE or SMALL BLACK.				
169.—BOAR, farrowed in 1900, 1901, or 1902 . .		7	3	2
170.—Pair of BOARS, farrowed in 1903 . . .		5	2	1
171.—Breeding Sow, farrowed before 1903 . . .		7	3	2
172.—Pair of Breeding Sows, farrowed in 1903 . .		5	2	1
TAMWORTH.				
173.—BOAR, farrowed in 1900, 1901, or 1902 . .		7	3	2
174.—Pair of BOARS, farrowed in 1903 . . .		5	2	1
175.—Breeding Sow, farrowed before 1903 . . .		7	3	2
176.—Pair of Breeding Sows, farrowed in 1903 . .		5	2	1
SPECIAL PRIZES.				
(Offered by the National Pig Breeders' Association.)				
Silver Medal for the Best Boar, of the Large White, Middle White, Small White, or Tamworth breed, exhibited in Classes 161 to 176, eligible for entry in the Herd Book, and not having pre- viously won the Society's Medal during 1903.				
Silver Medal for the Best Sow, ditto ditto.				

PRODUCE.

CIDER.

(Open to Growers or Makers.)

First Prize in each Class, a Silver Medal and a Certificate.

Second Prize in each Class, a Bronze Medal and a Certificate.

CHAMPION PRIZE.

For Best Exhibit in any of the Classes, a Gold Medal, a Certificate, and £20.

(The £20 given as a Champion Prize is offered by the Bristol Local Committee.)

The Cider must have been made in 1902, and each Exhibit in Cask must consist of not less than 18 gallons.

Cider made in Devon.

CLASS

- 177.—Cask of CIDER, containing not less than 4 per cent. of alcohol.
- 178.—12 Bottles of CIDER, ditto
- 179.—Cask of CIDER, containing less than 4 per cent. of alcohol.
- 180.—12 Bottles of CIDER, ditto

Cider made in Herefordshire.

- 181.—Cask of CIDER, containing not less than 4 per cent. of alcohol.
- 182.—12 Bottles of CIDER, ditto
- 183.—Cask of CIDER, containing less than 4 per cent. of alcohol.
- 184.—12 Bottles of CIDER, ditto

Cider made in Somerset.

- 185.—Cask of CIDER, containing not less than 4 per cent. of alcohol.
- 186.—12 Bottles of CIDER, ditto
- 187.—Cask of CIDER, containing less than 4 per cent. of alcohol.
- 188.—12 Bottles of CIDER, ditto

Cider made in Gloucestershire.

- 189.—Cask of CIDER, containing not less than 4 per cent. of alcohol.
- 190.—12 Bottles of CIDER, ditto
- 191.—Cask of CIDER, containing less than 4 per cent. of alcohol.
- 192.—12 Bottles of Cider, ditto

Cider made in Counties other than those above named.

- 193.—Cask of CIDER, containing not less than 4 per cent. of alcohol.
- 194.—12 Bottles of CIDER, ditto
- 195.—Cask of CIDER, containing less than 4 per cent. of alcohol.
- 196.—12 Bottles of CIDER, ditto

C H E E S E.		First Prize.	Second Prize.	Third Prize.	Fourth Prize.
		£	£	£	£
CLASS					
197.—Three CHEESES (not less than 56 lbs. each), made in 1902		15	10	5	3
198.—Three Cheddar CHEESES (not less than 28 lbs. each), made in 1902 by a Student who has received not less than 4 consecutive weeks' instruction in one of the Society's Cheese Schools held since 1899		8	5	3	2
199.—Three CHEESES (not less than 28 lbs. each), made in 1903		8	5	3	2
200.—Three Cheddar CHEESES (not less than 28 lbs. each), made in 1903 by a Student who has received not less than 4 consecutive weeks' instruction in one of the Society's Cheese Schools held since 1899		6	4	2	1
201.—Eight Loaf or other Truckle CHEESES, made in 1903		5	3	2	1
£10 towards the Prizes in Class 202 is contributed by the Bristol Local Committee.					
202.—Three Caerphilly CHEESES, made in 1903		7	5	3	1 10s.
203.—Three Cream or other Soft CHEESES		3	2	1	10s.

BUTTER AND CREAM.

(These Classes are not open to Professional Teachers.)

204.—3 lbs. of Fresh (or very slightly salted) BUTTER, made of Cream from Cows other than Channel Island Breeds . .	4	3	2	1
205.—3 lbs. of Fresh (or very slightly salted) BUTTER, made of Cream from Cows of Channel Island Breeds only . . .	4	3	2	1
206.—3 lbs. of Fresh (or very slightly salted) BUTTER, made from scalded Cream . .	4	3	2	1

SPECIAL PRIZES.

Three Prizes of £1 each will be given for BUTTER, which has the Best keeping qualities, exhibited in Class 204, 205, or 206. 1 lb. will be taken on the first day of the Show from each Prize lot of Butter in the Classes named, and will be judged on the last day of the Show.

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BUTTER AND CREAM—continued.				
CLASS	First Prize.	Second Prize.	Third Prize.	Fourth Prize.
207.—3 lbs. of BUTTER, to which no salt whatever has been added to be judged on the last day of Show . .	£	£	£	£
208.—12 lbs. of Salted BUTTER, in a jar or crock, to be delivered to the Secretary four weeks before the Show .	4	3	2	1
209.—4 half-pounds of Scalded CREAM . .	4 3	3 2	2 1	1 10s.
 BUTTER-MAKING. 				
<i>(No Winner of a First Prize given by this Society for Butter-making during the last three years is eligible to compete in Classes 210 to 213.)</i>				
<i>(For Conditions and Regulations, see Entry Form.)</i>				
210.—For Dairymaids working for wages in a dairy belonging to a tenant farmer. On the 1st day of the Show . . .	4	3	2	1
211.—For Men and Women (except the winner of the 1st Prize in Class 210) who have never won a First Prize in any open Butter-making competition. On the 2nd day of the Show . . .	4	3	2	1
212.—For Men and Women (except the winners of the 1st Prizes in Classes 210 and 211). On the 3rd day of the Show . . .	4	2	3	1
213.—For Men and Women (except the winners of the 1st Prizes in Classes 210, 211, and 212). On the 4th day of the Show . . .	4	3	2	1
 CHAMPION CLASSES.				
214.—For winners of First and Second Prizes in the Butter-making Classes 210 to 213 or at any previous meeting of the Society. On the 5th day of the Show—				
1st Prize, Gold Medal				
2nd „ Silver Medal				
3rd „ Bronze Medal				

	First Prize.	Second Prize.	Third Prize.	Fourth Prize.
	£ s.	£ s.	£ s.	£ s.
MILKING.				
CLASS				
215.—For Men 20 years of age and over .	1 10	1 0	0 15	0 10
216.—For Women 20 years of age and over .	1 10	1 0	0 15	0 10
217.—For Boys and Girls under 20 years of age	1 10	1 0	0 15	0 10
SHOEING.				
218.—For NAG HORSE SHOEING, by Smiths over 25 years of age who have not previously won the First Prize in a corresponding class at one of the Society's meetings, or a Champion Prize at any other Society's Show. On the 3rd day of Show	4 0	3 0	2 0	1 0
219.—For CART HORSE SHOEING, by Smiths over 25 years of age, ditto ditto, on the 4th day of Show	4 0	3 0	2 0	1 0
220.—For Smiths under 25 years of age. (Com- petitors in this Class will be required to declare their age at the time of entry, and also to state whether they wish to shoe a Nag or a Cart Horse, on the 5th day of Show . .	4 0	3 0	2 0	1 0
221.—For NAG HORSE SHOEING, by previous winners of one of the Society's First Prizes or a Champion Prize at any other Society's Show, on the 5th day of Show	5 0			

CONDITIONS AND REGULATIONS.

GENERAL.

ENTRIES.

1. The following are the Fees payable for Stock Entries made on or before April 7. After that date and up to April 14, Entries (except in the Bending, Harness, and Jumping Classes) will only be received on payment, in each case, of double the Fee named below. *Exhibitors are requested to note that no exception can be made to this.* The Entry-fee is not returnable to an Exhibitor who enters an Animal in a Class for which it is ineligible.

		Members.	Non-Members.
		(see Reg. 5 below)	
Horses other than in the Bending,			
Harness, or Jumping Classes (see			
Reg. 2 below), including Horse Box	for each Entry	15s.	.. 30s.
Cattle, Sheep, and Pigs	do.	10s.	.. 20s.

For particulars as to fees in the Dairy Herds, Produce, Poultry, and Shoeing Classes, see Entry-forms.

2. Horses entered in the Bending, Harness, and Jumping Classes, and not having a box in the Yard, must be in the Yard by 2 P.M. on the day on which they compete, and, with the consent of the Stewards, may leave the Yard as soon as they have been judged. Entries in the Bending, Harness, and Jumping Classes, if no Horse Box is required, must reach the Secretary not later than May 9. If a Box is required the Entry must reach the Secretary on or before April 7, or, at double fees, by April 14. The Entry Fees are—

		Members.	Non-Members.
Without Horse Box	for each Entry	5s.	.. 10s.
With Horse Box	do.	15s.	.. 30s.

3. No Exhibitor can make more than three Entries in any one Class of Horses, Cattle, Sheep, or Pigs, except in the Bending, Harness, or Jumping Classes.

4. No Entry will be received unless the Fee accompanies it, and (if the Exhibitor is a Member of the Society) the subscription for the year, unless previously paid, together with any arrears that may be due.

5. The privilege of entering at Members' Fees is strictly limited to Members of the Society elected on or before January 27, 1903, and subscribing not less than 1*l.* annually.

6. Where a Prize is offered for a *pair* or *pen* of Animals, Single Entry-fees only are payable for each *pair* or *pen*, and only one Entry-form must be used.

7. All Entries must be made on the printed forms to be obtained of the Secretary (THOS. F. FLOWMAN, 4, Terrace Walk, Bath), and, in applying for Forms, Exhibitors are requested to state how many Entries they wish to make of either Horses, Cattle, Sheep, Pigs, &c., as each Stock Entry must be made on a separate Form.

8. Every Exhibitor or Competitor is requested to carefully examine the List of Prizes and Conditions, as he will be held responsible for the correctness of his Certificate of Entry. An Exhibitor omitting to give information asked for on the Entry-form, with regard to the age, breeder, name, colour, sire, dam, &c., of an Animal, will be liable to have his Entry disqualified.

9. If an Exhibitor or Competitor fails, when called upon by the Stewards

or Council, to prove the correctness of his Certificate of Entry to their satisfaction, the Entry may be disqualified, and any Award made to it cancelled.

10. An Exhibitor who has made, in due time, an Entry of Horses, Cattle, Sheep, or Pigs in a particular Class, will be permitted, up to Wednesday, April 29, to withdraw the Entry of such Animal, and to substitute for it the Entry of another Animal in the same Class, on payment of the difference, if any, between the amount of the Entry-fee originally paid for the Animal withdrawn, and the post Entry-fee.

11. An Animal can be entered in as many Classes as it is eligible for on payment of an additional Fee in each Class. No additional Fee is, however, payable in the case of Special Prizes for Exhibits already entered in any particular Class.

12. Every Exhibit must be the *bonâ fide* property of the Exhibitor both at the time of Entry and on the first day of the Exhibition.

SHOWYARD.

13. The Yard will be open for the reception of Horses (see Regulation 2 for Bending, Harness and Jumping Horses), Cattle, Sheep, and Pigs, on Monday and Tuesday, May 25 and 26, from 7 A.M. to 6 P.M. Horses will also be received from 6 to 8 o'clock on the morning of the first day of Show, but all other Stock Entries must be in the Yard the previous day. A Label denoting the number of each Entry will be sent by the Secretary, and must be securely affixed to the head of the Animal, or, in the case of other Exhibits, to the receptacle containing such Exhibits. The carriage of Exhibits must in all cases be paid by the Exhibitor. No Exhibit subject to charges will be received by the Officers of the Society.

14. All Live Stock (see Conditions 2, 38, and 39 for exceptions with regard to Horses) must remain in their places in the Showyard until after six o'clock in the afternoon of the last day of the Show, and shall under no circumstances be taken out of their places in the interval without the special permission of the Stewards.

15. During the time the Show is open to the public no rug or cloth shall be hung up so as to conceal any animal in a horse-box or stall, except with the special permission of the Steward of the department.

16. All Exhibits and all persons in charge of the same, will be subject to the Orders, Regulations, and Rules of the Society, and the Stewards shall have the power to remove from the Yard the Stock or property belonging to, and to cancel the admission ticket of, any Exhibitor who shall infringe any of the Regulations or Conditions of the Meeting, or who shall refuse to comply with any instructions given by the Stewards, without any responsibility attaching to the Stewards or the Society in consequence of such removal.

17. No Animal shall be decorated with colours other than the Society's Prize Rosettes.

18. No person shall be allowed to fix any placard, or to take down any official placard in the Yard without the written permission of the Stewards.

19. All persons in charge of Exhibits will be subject to the orders of the Stewards, and will be required to parade or exhibit the Animals in their charge at such times as may be directed by the Stewards. Servants must be in attendance each day during the Show at least a quarter of an hour before the time appointed for exhibiting the Animals under their charge in the Show-rings. Owners of Animals exhibited will be held responsible for the behaviour of their Servants, and for the consequences of any misconduct of such Servants.

20. Servants in charge of Stock at night must, if they leave the Yard, return before 10 P.M., or they will not be admitted.

21. Hay, straw, and green food will be supplied by the Society free of expense to Exhibitors at the Forage Stores in the Showyard. Servants must apply at the Forage Stores for their Forage Tickets after they have brought their Animals into the Yard. Corn, meal, and cake can be obtained in the Showyard at fixed prices.

NOTE.—For the convenience of Exhibitors wishing to sell their Animals, a Register will be kept at the Secretary's Office, in which they may enter the prices.

TICKETS.

22. Each Exhibitor of Live Stock will have a Free Ticket of admission to the Showyard sent to him, except in the case of a Member of the Society, who will receive his Member's Ticket in lieu of an Exhibitor's Ticket. Tickets for the use of Servants in charge of Live Stock remaining in the Yard will also be sent, and the Exhibitor will be held responsible for the proper use of such Tickets. In the Bending, Harness, and Jumping Classes, a Servant's Ticket will not be required, as the official label will admit the Driver or Rider, Horse and Vehicle into the Yard. In case of transfer or other improper use of a Ticket, the Exhibitor will be required to pay a fine of £1. for each case. Exhibitors will be held responsible for the attendance at each Parade of as many Servants as Tickets have been issued for.

RESPONSIBILITY.

23. Neither the Society nor any of its Officers or Servants shall be in any way responsible or accountable for anything that may happen (from any cause or circumstance whatever) to Exhibitors or their Servants, or to any Animal or Article exhibited, or property brought into the Showyard, or otherwise for anything else in connection with, or arising out of, or attributable to, the Society's Show, or these or any other Conditions or Regulations prescribed by the Society in relation thereto.

24. Each Exhibitor shall be solely responsible for any consequential or other loss, injury, or damage done to, or occasioned by, or arising from, any Animal or Article exhibited by him, and shall indemnify the Society against all legal or other proceedings in regard thereto.

25. The Society, its Officers, and Servants, will not be liable for any errors or mistakes that may happen in placing or penning the Stock or Articles to be exhibited, but the Servants in charge of the same must see that they are placed or penned according to their Entries.

DISQUALIFICATIONS.

26. No Animal which has been exhibited as Fat Stock at any Show shall be eligible to compete for the Prizes offered in this Prize Sheet.

27. No Animal which has taken a First Prize at any Meeting of this Society can compete again in the corresponding Class.

28. An Animal having any unsoundness likely to be transmitted to its progeny, shall be disqualified thereby from receiving any Prize offered by or through the Society.

29. If it shall be proved to the satisfaction of the Stewards or Council that an Exhibitor or Competitor has knowingly signed an incorrect Certificate, or knowingly given an incorrect Pedigree of any Animal, or has attempted to enter an Animal or other Exhibit, or to obtain a Prize by any other unfair means at this or any other Agricultural Society's Meetings, or is under exclusion from any Breed Society for fraudulent practices, the Council shall have the power to cancel all Awards made to such Exhibitor or Competitor, to disqualify him or her from exhibiting or competing at future Meetings

of the Society, and to inform other Agricultural Associations of their action in this respect.

PENALTIES.

30. As the non-exhibition of Animals entered for the Show causes unnecessary preparations and expense, and disarranges the Showyard, any person entering Stock, and failing to exhibit the same shall pay a penalty of 10s. for each Entry, unless a Certificate, under the hand of the Exhibitor or his authorised Agent, be lodged with the Secretary of the Society, before the day of Exhibition, certifying that such non-exhibition is caused either by— (1) the death of the animal or animals; or (2) contagious or infectious disease (confirmed by the explanatory Certificate of a Veterinary Surgeon); or (3) by its becoming ineligible for the Class in which it has been entered.

31. Every Exhibitor will be required to undertake to forfeit and pay to the Society the sum of 20*l.*, as and for liquidated damages, if any Animal which he exhibits be, to his knowledge, suffering from any contagious or infectious disease, and the Stewards are empowered to prevent the entry of any diseased Animal into the Yard, or to have it removed therefrom.

32. Any infringement of any of these or any other prescribed Regulations or Conditions will subject the Exhibitor to a fine of 1*l.* by the Stewards, and to the forfeiture, by order of the Council, of any Prize to which he may be entitled (in addition to all other consequences attaching to such infringement). The Council reserves to itself the right to inform other Agricultural Associations of any decision it may come to with respect to an Exhibitor.

AWARDS.

33. The Society reserves to itself the right to withhold any Prize, if, in the opinion of the Stewards, the conditions and regulations have not been properly complied with.

34. No Second Prize will be given in any Class of Stock unless there are three Entries, no Third Prize unless there are six Entries, and no Fourth Prize unless there are nine Entries.

35. Only the signed Awards of the Judges are accepted by the Society as evidence that a Prize has been awarded, and the production of the Prize-card or the rosette by an Exhibitor will not entitle him to the Prize.

36. The Certificate of the Veterinary Inspector, whether as to age or soundness, shall be required only in cases where the Judges are in doubt, or where the Stewards may consider it necessary. The decision of the Inspector in such cases shall be final and conclusive; and in case it shall be against the Animal to which a Prize has been awarded, such Animal shall be disqualified from receiving such Prize.

PROTESTS.

37. Any Exhibitor wishing to lodge a protest having reference to Live Stock exhibited at this Meeting must make the same in writing on a form to be obtained from the Secretary and deposit with him the sum of 3*l.* If on investigation the protest is not sustained to the satisfaction of the Stewards, the sum thus deposited shall, at the discretion of the Council, be forfeited to the funds of the Society. All protests must be delivered at the Secretary's Office in the Showyard, on the day on which the Award is made, and no protest will be SUBSEQUENTLY received, unless a satisfactory reason be assigned for the delay. The Stewards will consider such protests at Eleven o'clock on the following day at the Secretary's Office, at which time and place any person making a protest must attend or be represented by his authorised Agent. The decision of the Stewards shall be final.

APPLYING TO CERTAIN CLASSES ONLY.

HORSES.

38. Horses can be removed from the Yard at night on deposit by the Exhibitor of 3*l.* at the Finance Office, which sum will be forfeited if the Horse does not return at 8 A.M. each day during the Exhibition. This regulation does not apply to Horses entered in the Bending, Harness, and Jumping Classes only.

39. The Stallions in Classes 1, 2, 25, 26, and 27 can be taken out of the Yard after the parade of Horses on the third day of the Show.

40. Exhibitors must provide saddles for Horses in Classes 14, 15, 16, 21, 32, 33, 37 to 41, and in Classes 52 to 61, as they are to be ridden; and vehicles and harness for those in Classes 42 to 51, which are to be driven. Stallions in Classes 32 and 33 need not be ridden unless they are shown as playing Polo Ponies.

41. No Horse, unless a Foal, will be admitted into the ring without a proper bit.

42. The Prizes for Stallions in Classes 1, 25, 26, and 27 will be withheld until a Certificate from the owner is delivered to the Secretary that the Horse has served at least 20 Mares during the current season.

43. All Foals must be the offspring of the Mares with which they are exhibited, and the name of the Sire of the Foal must be stated on the Certificate of Entry.

44. Mares entered as in-Foal shall, except as otherwise stated, hereafter be certified to have produced a living Foal before the 1st August of the year of the Show. If the required Certificate, which must be on a form obtainable from the Secretary, is not received by September 30, 1903, the Prize awarded will be forfeited.

45. Horses may, at the discretion of the Stewards, be measured, and the measurement shall be taken in the shoes worn by the Entry at the time of judging.

46. The following special conditions apply only to the Prize offered by the Shire Horse Society, viz.: the owner of the Animal entered to have been a Member of the Bath and West and Southern Counties Society for not less than six months previous to April 14, 1903; a Mare six years old, or upwards, to have had a living Foal; no Animal to compete which has won the Shire Horse Society's Gold Medal during the current year, the Royal and London Shows being excepted; the winning Animal to be entered, or eligible for entry, in the Shire Horse Society's Stud Book; and a Certificate that she is free from hereditary disease to be lodged with the Secretary of the Shire Horse Society, the Veterinary examination to be made on the ground by the Veterinary Inspector appointed for the Show. A Prize of 5*l.* will also be awarded to the breeder of the Animal winning the Medal, provided he is a Member of the Shire Horse Society and that the Dam is a Mare registered in the Shire Horse Stud Book.

47. The following Special Conditions apply only to the Prize offered by the Hunters' Improvement Society for Hunter Brood Mares, viz.:—The Mare awarded the Medal must, if not already entered, be registered, within a month of the award, in the Hunter Stud Book, and must possess a Certificate of soundness from hereditary disease, signed by the Bath and West Society's appointed Veterinary Inspector, who must be a Member of the Royal College of Veterinary Surgeons, after his examination of the Animal on the Show Ground. In the case of Mares entered as "in-foal," a further Certificate of foaling must also be lodged with the Secretary of the Hunters' Improvement Society before the Award will be confirmed.

NOTE.—If the Judges select a Brood Mare whose Entry for the Stud Book

was lodged before the date of the Bath and West Society's Show, the Prize will be increased to a Gold Medal and 1*l.*, or 5*l.* and a Silver Medal.

48. The following Special Conditions apply only to the Prize offered by the Hunters' Improvement Society for Hunter Fillies. The Filly awarded the Medal must, if not already entered, be registered, within a month of the Award, in the Hunter Stud Book, and not having previously won the Hunters' Improvement Society's Silver Medal in 1903, and must possess a Certificate of soundness from hereditary disease, signed by the Bath and West Society's appointed Veterinary Inspector, who must be a Member of the Royal College of Veterinary Surgeons, after his examination of the Animal on the Show Ground.

NOTE.—If the Judges select a Filly whose Entry for the Stud Book was lodged before the date of the Bath and West Society's Show, the Prize will be increased to a Silver Medal and 1*l.*

49. The following Special Conditions apply only to the Prize offered by the Hunters' Improvement Society for best Mare or Gelding of any age. The Hunter awarded the Medal must possess a Certificate of soundness from hereditary disease signed by the Bath and West Society's Veterinary Inspector, who must be a member of the Royal College of Veterinary Surgeons, after his examination of the Animal on the Show Ground; if a Mare is selected, both she and her Dam, if not already entered, must be registered within a month of the Award in the Hunter Stud Book; if a Gelding is selected, the Dam must comply with such conditions before the Award will be confirmed. No Animal may take more than one of these Medals in 1903.

50. The following Special Condition applies only to the Medal offered by the Hunters' Improvement Society for Yearling Hunter Colts:—The Hunter Colt awarded the Medal must possess a Certificate of soundness from hereditary disease signed by the Bath and West Society's Veterinary Inspector, who must be a Member of the Royal College of Veterinary Surgeons after his examination of the animal on the Show Ground.

51. The following Special Conditions apply only to the Gold Medal offered by the Hackney Horse Society for Hackney Mare or Filly:—A Mare, six years old or upwards, to have had a living Foal. An Animal, having been awarded one of the Hackney Society's Gold Medals, to be ineligible to take a second Medal during the current year, the Royal and London Shows being excepted. Any Animal awarded a Medal must be entered or accepted for registry in the Hackney Horse Society's Stud Book, and a Certificate that it is free from hereditary disease must be lodged with the Secretary of the Hackney Horse Society before the Medal will be despatched.

NOTE.—The Gold Medal is of the actual value of 10*l.* That amount will be paid by the Society at any time if the Medal be returned in good condition.

51*a.* The following special conditions apply only to the Gold Medal offered by the Hackney Horse Society in the Harness Classes:—All horses competing for the Medal must be *by a Registered Hackney Sire*. A certificate signed by the Breeder of the Animal must be forwarded to the Secretary of the Hackney Horse Society before the Medal is despatched. Each Animal must be measured by a qualified Veterinary Surgeon on the Show Ground, and a Certificate of soundness stating exact height must be supplied. The Medal must be open to all Classes, and not confined to local competition, and the name and number of the sire, and the name and address of the breeder of each Animal, must appear in the Catalogue. No Animal can take more than one of the Harness Medals in any one year, but an Animal which has been awarded one of the Society's Medals under other schemes is eligible.

NOTE.—The Gold Medal is of the actual value of 5*l.* That amount will

be paid by the Society at any time if the Medal be returned in good condition.

52. The following special conditions apply only to the Medals offered by the Polo and Riding Pony Society. Height of Pony not to exceed 14'2, as confirmed by Hurlingham Certificate or that of a qualified Veterinary Surgeon. Ponies having previously won one of the Polo Pony Society's Gold or Silver Medals during the current year not to be eligible to compete. No Pony can take more than one Silver Medal during any one year. The entry of the Winner must, if not already entered in the Supplement or Registered in the Stud Book, be duly lodged with the Polo Pony Society before the Medals will be despatched. All Brood Mares to have foal at-foot or to be due to foal in 1903, or if they have foaled in 1903 and the foal has died, a Veterinary Certificate to the effect that the foal was born alive to be provided.

53. The following Special Conditions apply to Horses entered in the Jumping Competitions:—The jumps may consist of single hurdle, gate, double hurdle, bank, wall and water jump, at the discretion of the Judge and Stewards. Each Horse competing shall have its catalogue number affixed to its breast in such a way that it may be easily seen by the general public. Each Horse competing shall be ridden at the fences in the order announced by the Stewards. In case of a Horse refusing his fence it shall be allowed two further trials and *no more*. No change of rider shall take place during the competition. The Judge may take into consideration the style in which the fences are jumped, as well as the height and breadth, and his decision shall be final.

CATTLE.

54. All Cattle must be properly secured to the satisfaction of the Officers of the Society, on being brought to the gate of the Yard, or they will not be admitted.

55. All Bulls must have a ring or clamp attached to the nose, and in the aged Classes must be provided with a strong chain, and be led with a proper stick.

56. All Cattle will be required to be paraded in the ring at least once a day at the discretion of the Stewards.

57. No Bull calved before January 1, 1901, or in the Aberdeen-Angus Classes before December 1, 1900, will be eligible to receive a Prize until certified to have served not less than six different Cows (or Heifers), previous to June 1, 1903, and to be the sire of live Calves dropped in the year 1903.

58. No Cow or Heifer, entered as in-milk, will be eligible to receive a Prize until certified to have had a living Calf within the fifteen months preceding the date of Show, or that the Calf, if dead, was born at the proper time.

59. Every Cow or Heifer in-milk shall be milked dry in the Showyard at 7.30 P.M. on the evening preceding the day of judging, in the presence of an Officer of the Society appointed for the purpose.

60. Any Animal in the Cattle Classes found to be artificially coloured will be disqualified.

61. Any person selling Milk in the Yard, except in the place appointed by the Stewards, will be fined 5s. for each infringement of this Regulation.

62. The Blythwood Challenge Bowl when won two years in succession or three years at intervals, by different animals belonging to the same Exhibitor, will become absolutely his property. Any Animal having once been awarded one of the "Blythwood Bowls" will not be eligible to compete again. The possessor of the Bowl must give security to the Society that it shall be

delivered up to the Secretary 14 days before the commencement of the Society's Show the following year.

63. Except in the Local and Dairy Classes, every Animal entered for Competition must be entered, or certified as eligible to be entered, in the Herd Book of its Breed, where such Herd Book exists, and has been in existence for not less than seven years. Where an Animal is entered by the Exhibitor as eligible for Entry in the Herd Book of its Breed, proof of such eligibility must be furnished to the Secretary at the time of making the Entry.

SHEEP.

64. All Sheep (except those in the Mountain Classes, which must be shown in their wool) over one year old must have been really and fairly shorn bare on or after the 1st of March, 1903. If the Judges consider that a Sheep has not been shorn bare they will report this to the Stewards, with a view to its disqualification.

65. Each pen of Ewes must be of the same Flock.

66. The following conditions apply to the Special Prizes offered by the Southdown Sheep Society:—The sheep competing must be entered or eligible for entry in the Flock Book. In the classes for pairs of ram lambs Exhibitors will have the privilege of competing for the Medal with any one of their Exhibits.

Pigs.

67. The Pair of Pigs in each pen must be of the same litter.

68. All Sows farrowed before 1903 shall be certified to have had a litter of live Pigs within six months preceding the first day of exhibition, or to be in-Pig at the time of entering, so as to produce a litter of Pigs, farrowed at their proper time, before the 1st of September following. In the case of in-Pig Sows the Prize will be withheld until the Exhibitor shall have furnished the Secretary with a Certificate of farrowing as above. If the required Certificate, which must be on a form obtainable from the Secretary, is not received on or before the 15th September following, the Prize awarded will be forfeited.

69. All Pigs exhibited with a Sow shall be her own produce, of the same litter, and not exceeding two months old at the time of the Show.

70. No Sow above 18 months old that has not produced a litter of live Pigs shall be eligible to compete in any of the Classes.

71. Any Animal in the Pig Classes found to be artificially coloured will be disqualified.

72. Should any question arise as to the age of any Exhibit in the Pig Classes, the Stewards shall, at the request of the Judge, have the state of their Dentition examined by a competent authority. If the state of the Dentition shall indicate that the age of any of the Pigs does not agree with the Dentition Test, the Stewards shall report the same to the Council, who shall have power to disqualify such Pig or Pigs. The following is the state of Dentition in Pigs which will be considered as indicating that they exceed the ages specified below:—Six Months: Pigs having their corner permanent incisors cut will be considered as exceeding this age. Nine Months: Pigs having their permanent tusks more than half up, will be considered as exceeding this age. Twelve Months: Pigs having their central permanent incisors up, and any of the three first permanent molars cut, will be considered as exceeding this age. Fifteen Months: Pigs having their lateral temporary incisors shed, and the permanents appearing, will be con-

sidered as exceeding this age. Eighteen Months: Pigs having their lateral permanent incisors fully up will be considered as exceeding this age.

CIDER, DAIRY PRODUCE, POULTRY, MILKING, AND SHOEING.

For Conditions and Regulations see Entry-Forms.

ADJUDICATION OF PRIZES.

73. The Judges are instructed as follows, and Entries are received subject to this:—

a. Not to award any Prize or Commendation unless the Entry possesses sufficient merit.

b. Not to award a Prize to any Horse or Mare unless it is free from unsoundness likely to be transmitted to its progeny; or if a Gelding, unless free from unsoundness; in either case, an accident having temporary consequences only excepted.

c. In awarding Prizes to Cattle, Sheep, and Pigs, to decide according to the relative merits of the Animals for Breeding purposes, and not to take into consideration their present value to the butcher.

d. To make the milking capacity and form of udder one of the chief points in awarding Prizes to pure bred Shorthorn Cows and Heifers.

e. To draw the attention of the Stewards to any Exhibit that has been improperly prepared for exhibition or is wrongly entered.

f. To report to the Stewards for disqualification any Sheep which in their opinion has not been shorn bare.

g. To give in a "RESERVED NUMBER" in each Class, indicating the Animal or Exhibit which in their opinion possesses sufficient merit for the Prize, if the Animal or Exhibit to which the Prize is awarded should become disqualified. Should the "Reserve Number" succeed to a Prize, and be itself disqualified, the Prize will be forfeited.

h. Immediately after the Judging to deliver to the Stewards on the Special Sheets, to be obtained at the Secretary's Office, their Awards, signed, stating the numbers to which the Prizes are adjudged, and noting all disqualifications.

74. Should any question arise upon which the Judges may desire a further opinion, the Stewards shall provide them with a Referee.

PAYMENT OF PRIZES.

75. Cheques for the Prizes awarded (except where further qualification of an Animal is required) will be drawn at the meeting of the Finance Committee held in July, 1903, and will then be forwarded by post to the Exhibitors to whom they have been awarded.

INTERPRETATION OF CONDITIONS.

76. The Society reserves to itself by its Council the sole and absolute right to interpret these or any other prescribed Conditions and Regulations, or Prize Sheets, and to arbitrarily settle and determine all matters, questions, or differences in regard thereto, or otherwise arising out of or connected with or incident to the Show. Also to refuse and to cancel any Entries, disqualify Exhibitors, prohibit exhibition of Entries, vary or cancel awards of Prizes or Reserved Numbers, and relax Conditions, as the Society may deem expedient.

BRISTOL MEETING,

MAY 27, 28, 29, 30, AND JUNE 1, 1903.

PRIZES FOR POULTRY.

CLASS	First Prize.	Second Prize.	Third Prize.
	£ s.	s. d.	s. d.
1.—ANY DISTINCT BREED—Cock and 4 Hens, bred in 1902 or 1903, the property of one Exhibitor	5 0	60 0	40 0
2.—COCHIN—Cock	1 10	15 0	10 0
3.—Ditto—Hen	1 10	15 0	10 0
4.—BRAHMA—Cock	1 10	15 0	10 0
5.—Ditto—Hen	1 10	15 0	10 0
6.—LANGSHAN—Cock	1 10	15 0	10 0
7.—Ditto—Hen	1 10	15 0	10 0
8.—PLYMOUTH ROCK—Cock	1 10	15 0	10 0
9.—Ditto—Hen	1 10	15 0	10 0
10.—WYANDOTTE—Cock	1 10	15 0	10 0
11.—Ditto—Hen	1 10	15 0	10 0
12.—ORPINGTON—Cock	1 10	15 0	10 0
13.—Ditto—Hen	1 10	15 0	10 0
14.—MINORCA—Cock	1 10	15 0	10 0
15.—Ditto—Hen	1 10	15 0	10 0
16.—LEGHORN—Cock	1 10	15 0	10 0
17.—Ditto—Hen	1 10	15 0	10 0
18.—HAMBURG—Cock	1 10	15 0	10 0
19.—Ditto—Hen	1 10	15 0	10 0
20.—DORKING (Coloured)—Cock	1 10	15 0	10 0
21.—Ditto—Hen	1 10	15 0	10 0
22.—DORKING (Silver Grey)—Cock	1 10	15 0	10 0
23.—Ditto—Hen	1 10	15 0	10 0
24.—DORKING (White or Cuckoo)—Cock	1 10	15 0	10 0
25.—Ditto—Hen	1 10	15 0	10 0
26.—OLD ENGLISH GAME—Cock	1 10	15 0	10 0
27.—Ditto—Hen	1 10	15 0	10 0
28.—INDIAN GAME—Cock	1 10	15 0	10 0
29.—Ditto—Hen	1 10	15 0	10 0
30.—MALAY—Cock	1 10	15 0	10 0
31.—Ditto—Hen	1 10	15 0	10 0
32.—FRENCH—Cock	1 10	15 0	10 0
33.—Ditto—Hen	1 10	15 0	10 0
34.—ANY OTHER DISTINCT BREED (not previously mentioned)—Cock	1 10	15 0	10 0
35.—Ditto—Hen	1 10	15 0	10 0
(In Classes 36 to 45 the birds must have been hatched after December 31, 1902, and must not have moulted all the chicken flight feathers of the wing.)			
36.—Cochin, Brahma, Langshan, Plymouth Rock, Wyandotte, or Orpington—Cockerel	1 10	15 0	10 0
37.—Ditto—Pullet	1 10	15 0	10 0

CLASS	First Prize.	Second Prize.	Third Prize.
	£ s.	s. d.	s. d.
38.—Minorca, Andalusian, Leghorn, Hamburg, or French —Cockerel	1 10	15 0	10 0
39.—Ditto—Pullet	1 10	15 0	10 0
40.—Dorking, Game, Malay, or any other Distinct Breed (not previously mentioned)—Cockerel	1 10	15 0	10 0
41.—Ditto—Pullet	1 10	15 0	10 0
LIVE TABLE POULTRY.			
42.—Pair of Cockerels of any Pure Breed	1 10	15 0	10 0
43.—Ditto—Pullets	1 10	15 0	10 0
44.—Pair of Cross-bred Cockerels	1 10	15 0	10 0
45.—Ditto—Pullets	1 10	15 0	10 0
SELLING CLASSES.			
46.—ANY DISTINCT BREED—Cook (<i>price not to exceed</i> <i>1l. 1s.</i>)	1 10	15 0	10 0
47.—ANY DISTINCT BREED—Hen (<i>price not to exceed</i> <i>1l. 1s.</i>)	1 10	15 0	10 0
DUCKS, GEESE, AND TURKEYS.			
48.—DRAKE or DUCK (Aylesbury)	1 10	15 0	10 0
49.—Ditto (Rouen)	1 10	15 0	10 0
50.—Ditto (Pekin)	1 10	15 0	10 0
51.—GANDER or GOOSE	1 10	15 0	10 0
52.—TURKEY—Cock or Hen	1 10	15 0	10 0
DEAD TABLE POULTRY.			
<i>(To be forwarded alive, and to be killed and plucked by a Poullterer acting for the Society. See Regulation 12.)</i>			
<i>(In Classes 53 to 57 the birds must have been hatched after December 31, 1902, and must not have moulted all the chicken flight feathers of the wing.)</i>			
53.—Pair of Cockerels of any Pure Breed	1 0	15 0	10 0
54.—Ditto—Pullets	1 0	15 0	10 0
55.—Pair of Cross-bred Cockerels	1 0	15 0	10 0
56.—Ditto—Pullets	1 0	15 0	10 0
57.—Pair of Ducklings	1 0	15 0	10 0

POULTRY.

CONDITIONS AND REGULATIONS.

CHARGES, &c.

1. Exhibitors may make an unlimited number of Entries in each Class on payment of Fees as follows :—

	Members.		Non-Members.	
	s.	d.	s.	d.
Classes 1 to 52	2	6	5	0
Dead Poultry Classes, 53 to 57	1	0	2	6

The above Fees include coops, food, and attendance.

N.B.—The above Fees *must* be sent with the Entries, or no notice will be taken of the latter.

2. The privilege of entering at Member's Fees is strictly limited to Members of the Society, elected on or before January 27, 1903, and subscribing not less than 1*l.* annually.

3. All Entries must be made on the printed forms, to be obtained of the Secretary (THOS. F. PLOWMAN, 4, Terrace Walk, Bath), and such forms must be correctly filled up and returned to the Secretary, together with all Fees due, on or before May 2. Exhibitors are requested to carefully examine the List of Prizes and Conditions, as the Society cannot be responsible for any errors made by Exhibitors in the Entry-forms, and birds entered in a wrong Class will be necessarily excluded from competition. No alterations can be made in Entry-forms after they have been received by the Secretary.

4. The Council reserve the right to refuse the Entries of any person.

5. Exhibitors must state the price and breed of their birds on their Entry-forms.

SHOWYARD.

6. All birds must be in the Showyard by 6 P.M. on *Tuesday, May 26*, and no bird can be removed before Monday, June 1, at 7 P.M. Any Exhibitors who send for their birds must do so between 7 and 8 P.M. on that day.

7. All carriage must be prepaid to Bristol Railway Station, otherwise the birds will not be received at the Exhibition; but they will be conveyed free of expense from the Station to the Showyard and back.

8. No Exhibitor or Servant will be allowed into the tent until the birds have been judged.

9. The Poultry Tent will not be open to the public until 2 o'clock on the first day of the Exhibition.

10. A Non-Transferable Admission Ticket for the Exhibition will be sent to each Exhibitor whose Entry-fees amount to 1*l.* and upwards.

TABLE POULTRY.

11. In these Classes (42 to 45 and 53 to 57) quality for the table will be considered before mere weight. The date of hatching must be given, and, in the case of cross-bred birds, the breeds of the parents.

12. In Classes 53 to 57 the whole of the birds will be first exhibited alive. They will all be killed on the evening of Wednesday, May 27, and trussed by a qualified Poulterer, the Prizes being finally awarded to the dead birds. These will then all be exhibited, but will be withdrawn from exhibition when considered necessary, and, if unsold, will be returned to Exhibitors after 6 P.M. on Friday, May 29.

Exhibitors are recommended to put a reasonable price upon their Exhibits in these Classes so as to promote the sale of them.

SALES.

13. All birds may be claimed, at the price put upon them, any time after 4 o'clock on Wednesday, May 27, and a sale *must take place* if the price stated be paid to the Clerk in the Poultry Office at the time of claiming. *No alteration can be made in the prices stated on the Entry-forms* and in the Catalogue until after Friday, May 29, when the price may be reduced on payment to the Stewards of 1s. per pen on each alteration. Birds must be *sold in pens*, and the price stated must include the basket. A charge of 10 per cent. will be made for all birds sold. The persons who have the management of the sales cannot take charge of birds which are disposed of privately.

AWARDS.

14. No Second Prize will be given in any of the Classes unless there are three Entries, and no Third Prize unless there are six Entries.

DISQUALIFICATIONS.

15. The Judges are empowered to withhold a prize or prizes where birds are not considered of sufficient merit, and are instructed to disqualify any that have been clipped, dubbed, drawn, trimmed, marked, or dyed.

16. An Exhibitor detected in a false statement as to the age, &c., of any bird, or in any other practice calculated to deceive or mislead the Judges or Stewards, shall forfeit all or any Prizes awarded to him or her at the Show, and will be disqualified from competing at any future Show of the Society, and the Council shall have the power to inform other Societies of their action in this respect.

17. No person who shall have been shown to the satisfaction of the Council to have been excluded from exhibiting for Prizes at the Exhibition of any other Society in consequence of having attempted to obtain a Prize by giving a false Certificate, or by other unfair means, and no person who is under exclusion from any Breed Society for fraudulent practices, shall be allowed to exhibit at this or any other Meeting of the Society.

18. Unhealthy birds will not be exhibited, but will be immediately returned to their owners, and the Fees will be forfeited.

PROTESTS.

19. In order to check frivolous and vexatious protests, no protest will be entertained unless accompanied by a deposit of 1*l.* in each case; and in case the protest is not substantiated, the deposit may be forfeited to the funds of the Society. All protests must be made before 12 o'clock (noon) on Thursday, May 28.

FORFEITS.

20. Persons entering birds, and failing to send the same to the Exhibition, will forfeit the entrance Fee for each pen so left vacant.

GENERAL.

21. All birds shown must be *bona fide* the property of the Exhibitor.

22. For each pen entered, the Exhibitor will receive a Label, on the reverse side of which he must legibly write his name and address for the return journey.

23. All Eggs laid at the Exhibition will be destroyed.

24. The Stewards pledge themselves to take every care of the birds exhibited, but neither they nor the Society will, in any case, be responsible for any accident, loss, or

damage, from whatever cause arising, the Exhibits being entered at the sole risk of the Exhibitors, and Exhibitors will be required to hold the Society harmless in the event of loss.

25. In case of death of any bird during the Exhibition, it will be sent back for the inspection of the Exhibitor.

26. The Poultry Department is subject to the Rules and Regulations of the Society and its Officers.

* * * *The use of properly-constructed Poultry Baskets will facilitate the safe and speedy conveyance of the birds to and from the Exhibition.*

The Society cannot, under any circumstances, undertake to send telegrams to Exhibitors as to Judges' Awards.

Applications for Catalogues (price 1s. each) and printed lists of Awards should be made only to the Publishers, Messrs. W. LEWIS AND SONS, Herald Office, Bath.

By Order of the Council,

THOMAS F. FLOWMAN, *Secretary.*

4, Terrace Walk, Bath.

Telegraphic Address—"FLOWMAN, BATH."

FINANCIAL STATEMENTS

FOR

1902

WITH ITEMS OF 1901 FOR COMPARISON.

	PAGES
SUMMARY OF THE CASH ACCOUNT	CXXVI, CXXVII
DETAILED CASH ACCOUNT	CXXVIII—CXXXIX
ASSETS AND LIABILITIES	CXL

The Bath and West and

SUMMARY OF THE CASH ACCOUNT

WITH COMPARATIVE

Page of accompanying Cash Account.	Dr.	RECEIPTS.	1902.		1901.
			PLYMOUTH.		CROFT.
			£	s. d.	£
		General Receipts:—			
cxviii		Dividends and Interest	533	17 11	537
cxviii		Cancelled Cheques	11	10 0	10
cxviii		Subscriptions from Members	1,101	7 6	1,081
cxviii		Life Compositions	20	0 0	20
cxviii		Journal	39	5 8	34
				1,706 1 1	1,684
		Show Receipts:—			
cxviii		Implements	1,45	7 10	1,419
			£	s. d.	
cxviii		Horses	781	0 0	714
cxviii		Cattle, Sheep, and Pigs.	589	15 0	638
cxviii		Catalogues, &c.	80	10 1	83
			1,451	5 1	1,437
cxviii		Poultry	80	6 9	96
cxviii		Shoeing	43	16 8	35
cxviii		Shearing	51	16 5	..
cxviii		Arts. . . . .	..		7
cxviii		Art-Union . . . . .	..		97
cxviii		Art-Manufactures.	86	8 0	76
					181
cxviii		Cheese and Butter.	68	11 2	83
cxviii		Working Dairy	131	2 4	153
cxviii		Cider	11	17 6	10
cxviii		Admissions	3,673	18 3	2,928
cxviii		Unapportionable:—			
		Contract Premiums, &c.	519	0 0	514
		Stand Fittings	297	5 6	284
			816	11 6	798
cxviii		Subscription from Bristol for 1903 Show	800	0 0	800
				8,084 1 6	7,955
cxviii		Schools . . . . .	..	1,169 6 2	1,450
cxviii		Experiments . . . . .	..	798 8 6	554
				12,857 17 3	11,654
cxviii		Balance in Bank, Jan. 1 . . . . .	..		382
cxviii		Balance due to Bank, Dec. 31 . . . . .	..	278 10 11	340
			£ 12,636	8 2	12,876

Southern Counties Society.**FOR THE YEAR ENDING DEC. 31st, 1902.****STATEMENT FOR 1901.****Cr.**

Account of Cash Account.	PAYMENTS.		1902.		1901.	
			PLYMOUTH		CHYNDEN.	
			£	s. d.	£	s. d.
	General Expenses :—					
XXIX	Salaries		775	0 0	775	0 0
XXIX	Rent, Postage, Stationery, &c.		252	2 6	260	7 3
XXIX	Journal		445	10 3	431	3 5
				1,472 12 9	1,466	10 8
	Show Expenses :—					
XXIX	Implements		554	15 5	588	18 3
		£ s. d.				
XXIX	Horses	1,171 3 1			1,280	4 1
XXVI	Cattle, Sheep, and Pigs	2,441 2 0			2,404	2 6
XXVI	Fodder, &c.	587 16 0			604	3 11
			4,210	3 1	4,288	10 6
XXVI	Poultry		258	19 1	263	16 11
XXVI	Shoeing		142	19 8	146	19 3
XXIII	Shearing		47	16 7		
XXIII	Arts				204	19 11
XXIII	Art-Union				186	11 4
XXVI	Art-Manufactures	42 3 0	..		75	2 0
XXIII	Science and Art	35 5 7	..		..
			77	8 7	466	13 3
XXIII	Music		158	15 0	277	5 0
XXIII	Horticulture		181	15 0	169	12 0
XXIII	Bees		10	0 0	..	
XXV	Cheese and Butter		244	18 2	266	8 9
XXV	Working Dairy		494	14 7	515	13 2
XXV	Cider		94	9 8	92	16 6
XXV	Public Announcements		384	1 0	448	9 7
XXVII	Unapportionable :—					
	Erection of Offices, &c.	779 19 4			1,181	19 9
	Carriage of Plant	164 0 0			191	9 8
	Stand Fittings	114 0 0			135	10 0
	Police	84 15 0			89	7 6
	Miscellaneous	268 13 9			335	6 6
			1,411	8 1	1,933	13 5
				8,272 3 11	9,456	16 7
XXVII	Schools . . . . .		..	1,019 17 1	1,308	13 9
XXIX	Experiments . . . . .		..	931 14 5	742	18 2
				11,696 8 2	12,976	19 2
XXIX	Balance due to Bank, Jan. 1 . . . . .		..	940 0 0	..	
				£ 12,636 8 2	12,976	19 2

Audited and found correct,
ALBERT GOODMAN, F.C.A.,
Auditor.
 January 17th, 1903.

Passed by Council.
 January 27th, 1903.
THOS. F. FLOWMAN,
Secretary.

The Bath and West and**Dr. CASH ACCOUNT FOR THE YEAR ENDING DEC. 31st,**

RECEIPTS.	1902.		1901.
	PLYMOUTH.		CROYDON.
	£	s. d.	£ s. d.
DIVIDENDS AND INTEREST:—			
Consols	93	6 6	93 18 10
New Zealand Stock	51	11 3	51 18 1
India Stock	152	8 10	153 9 2
Canada Stock	67	6 0	67 14 11
Queensland Stock	103	8 1	104 1 10
New South Wales Stock	65	17 3	66 6 6
		533 17 11	537 8 10
MISCELLANEOUS:—			
Cancelled Cheques . . . . .	..	11 10 0	10 17 6
SUBSCRIPTIONS FROM MEMBERS:—			
Arrears	46	3 6	26 0 0
Governors	215	19 0	217 17 0
Subscribers of £1 and upwards	820	14 0	819 14 0
Mtts of 10s.	18	11 0	17 11 0
		1,101 7 6	1,081 2 0
LIFE COMPOSITIONS . . . . .	..	20 0 0	30 0 0
JOURNAL:—			
Sales	12	1 9	12 1 7
Advertisements	27	8 11	22 10 8
		39 5 8	34 12 3
IMPLEMENTS:—			
Entry Fees	57	10 0	68 10 0
Fees for Space:—			
Machinery-in-Motion Shedding	294	5 0	189 10 0
Ordinary	321	10 0	340 0 0
Miscellaneous	259	17 6	292 10 0
Boards	274	7 6	275 5 0
Seed	12	0 0	17 0 0
Uncovered Ground	156	7 10	155 9 4
Catalogue Fees	83	10 0	81 14 6
		1,459 7 10	1,419 18 10
Carried forward . . . . .	..	£ 3,165 8 11	

Southern Counties Society.

1902, WITH COMPARATIVE STATEMENT FOR 1901.

Cr.

P A Y M E N T S.	1902.		1901.	
	PLYMOUTH.		CROYDON.	
	£	s. d.	£	s. d.
SALARIES:—				
Secretary (including Clerks, Gas, Coal, Lodgings at Show, &c.)	700	0 0	700	0 0
Auditor	20	0 0	20	0 0
Consulting Chemist	30	0 0	30	0 0
Consulting Botanist	25	0 0	25	0 0
	775	0 0	775	0 0
MISCELLANEOUS:—				
Printing	39	7 3	35	15 11
Stationery and Finance Books	47	1 11	40	18 0
Postages, Telegrams, Cheque and Receipt Stamps	66	4 3	77	0 0
Rent of Offices	26	0 0	26	0 0
Travelling Expenses	33	19 8	29	6 1
Carriage of Goods	8	14 6	12	19 6
Directories and Reference Books	4	13 3	3	12 9
Finance Committee's Expenses	8	5 6	13	17 0
Subscriptions	6	6 0	6	6 0
Repairs, &c.	4	13 8	5	0 6
Hire of London Rooms for Meetings	6	16 6	6	8 6
Grant to Tuberculosis Congress . . . . .	..		3	3 0
	252	2 6	260	7 3
JOURNAL:—				
Editor	100	0 0	100	0 0
Associate Editor	100	0 0	100	0 0
Printing and Binding	172	2 4	158	19 1
Plans	3	0 0	3	0 0
Journal Distribution	24	2 8	27	13 9
Postage, Stationery, Reference Books, &c.	6	7 3	6	18 7
Payments to Authors	39	18 0	34	12 0
	445	10 3	431	3 5
IMPLEMENTS:—				
Shedding	443	8 0	493	2 4
Stewards and Assistants	69	5 10	52	2 1
Printing, Stationery, &c.	42	1 7	43	13 10
	554	15 5	588	18 3
Carried forward . . . . .	..	£ 2,027 8 2		

PLYMOUTH MEETING, 1902. (CXXX)

Dr.

CASH ACCOUNT—continued.

RECEIPTS.	1902.			1901.		
	PLYMOUTH.			CROYDON.		
	£	s.	d.	£	s.	d.
Brought forward			3,165	8	11
HORSES, CATTLE, SHEEP, AND PIGS:—						
		£	s.			
Horses:—Entry Fees		200	10 0		231	10 0
Fines and Forfeits		4	0 0		2	0 0
Grand Stand Admissions		454	10 0		365	13 6
Special Prizes		122	0 0		115	0 0
		781	0 0		714	3 0
Cattle, Sheep, and Pigs:—						
Entry Fees		315	10 0		425	0 0
Fines		19	0 0		21	0 0
Special Prizes		255	5 0		193	10 0
		589	15 0		639	10 0
Catalogues and Sales		80	10 1		83	7 0
				1,451	5	1
				1,437	0	0
POULTRY:—						
Entry Fees		86	5 9		81	7 6
Special Prizes		1	5 0		13	0 0
Commission on Sales		1	16 0		1	18 9
				89	6	9
				96	6	3
SHOEING:—						
Entry Fees		17	17 6		23	10 0
Special Prizes and Grant for Expenses		25	19 2		12	0 0
				43	16	8
				35	10	0
Carried forward	4,749	17 5			

CASH ACCOUNT—continued.

Cr.

P A Y M E N T S.	1902.		1901.	
	PLYMOUTH.		CROYDON.	
	£	s. d.	£	s. d.
Brought forward . . . . .	..	2,027 8 2		
HORSES, CATTLE, SHEEP, AND PIGS:—				
Horses—Prizes	708	0 0	734	0 0
Shedding and Grand Stand	353	4 9	414	16 10
Stewards and Assistants	64	8 2	69	3 6
Judges	45	0 2	61	5 0
Miscellaneous	0	10 0	0	18 9
	1,171	3 1	1,280	4 1
Cattle—Prizes	1,084	10 0	1,165	10 0
Less deferred	5	0 0	2	0 0
	1,079	10 0	1,163	10 0
Sheep—Prizes	466	5 0	352	0 0
Pigs—Prizes	211	0 0	223	0 0
Less deferred	3	0 0	2	0 0
	208	0 0	221	0 0
Shedding and Canvas	460	7 5	481	18 8
Stewards and Assistants	42	0 9	44	14 10
Judges	175	3 10	140	9 0
Fees returned	9	15 0	0	10 0
	2,441	2 0	2,404	2 6
Buildings, &c.	217	5 0	261	15 0
Fodder and Insurance	263	14 3	212	19 8
Steward of Fodder and Assistants and Horse hire	9	8 3	9	15 6
Veterinary Inspector	22	4 1	19	10 8
Rosettes	10	12 0	10	3 4
Printing and Stationery	65	0 9	69	14 0
Refreshments to Judges	9	13 8	14	5 9
Deferred Prizes . . . . .	..		6	0 0
	597	18 0	604	3 11
	4,210	3 1	4,288	10 6
POULTRY:—				
Marquee, Staging and Sheds	57	14 0	53	10 0
Steward and Assistants	24	12 10	24	0 3
Judges	14	15 3	12	16 5
Prizes	146	15 0	154	5 0
Printing, Stationery, Cartage, &c.	15	2 0	19	5 3
	258	19 1	263	16 11
SHOEING:—				
Prizes	53	10 0	47	0 0
Judges	13	1 9	8	10 0
Anvils, Forges, Coals, Horses, Printing, &c.	10	11 10	19	9 3
Shedding	54	8 1	62	0 0
Steward and Assistants	11	8 0	10	0 0
	142	19 8	146	19 3
Carried forward . . . . .	..	£ 6,619 10 0		

Dr. CASH ACCOUNT—continued.

RECEIPTS.	1902. PLYMOUTH.			1901. CROYDON.		
	£	s.	d.	£	s.	d.
Brought forward			4,749	17	5
SHEARING:—						
Entry Fees		3	15 0			
Special Prizes and Grant for Expenses		48	1 5			
				51	18	5
ARTS		7 11 9
ART-UNION		97 19 0
ART-MANUFACTURES:—						
Fees for Space			86	8	0
Carried forward	£	4,888	1 10			

CASH ACCOUNT—*continued.*

CR.

P A Y M E N T S.	1902.			1901.		
	PLYMOUTH.			CROYDON.		
	£	s.	d.	£	s.	d.
Brought forward . . . . .	..		6,639 10 0			
SHEARING:—						
Prizes	21	5	0			
Judges	6	9	4			
Steward and Assistants, and Printing	4	13	6			
Shedding	15	8	9			
			47 16 7	..		
ARTS . . . . .	..		..	204	19	11
ART-UNION . . . . .	..		..	186	11	4
ART-MANUFACTURES:—						
Labour and Fittings	32	0	0	70	6	0
Steward and Assistants, Printing, &c.	8	7	0	4	16	0
Fees returned	1	16	0	..		
			42 3 0	75	2	0
SCIENCE AND ART:—						
Labour and Fittings	25	0	0			
Stewards and Assistants, Printing, &c.	10	5	7			
			35 5 7	..		
MUSIC:—						
Bands and their Fares	125	0	0	242	0	0
Erecting Band Stand and Seats and Printing	29	0	0	29	10	0
Steward	4	15	0	5	15	0
			158 15 0	277	5	0
HORTICULTURE:—						
Gratuities to Gardeners	87	0	0	90	0	0
Erecting and Repairing Tent and Staging	78	0	0	64	0	0
Steward and Assistants	19	15	0	15	12	0
			181 15 0	169	12	0
BEEES:—						
Grant to Beekeepers' Association . . . . .	..		10 0 0	..		
Carried forward . . . . .	..		£ 7,115 5 2			

PLYMOUTH MEETING, 1902.

(cxxxiv)

Dr.

CASH ACCOUNT—continued.

RECEIPTS.			1902. PLYMOUTH.			1901 CASH.
			£	s.	d.	£
Brought forward	.	.	4,888	1	10	
CHEESE AND BUTTER:—						
Entry Fees	.	.	47	15	0	47 15 0
Cheese and Butter Sales	.	.	16	16	2	20 16 2
Special Prizes	.	.	4	0	0	24 0 0
Fines	.	.				1 10 0
						68 11 2
WORKING DAIRY:—						
Admissions	.	.	8	5	0	6 0 0
Entry Fees, Competitions	.	.	36	4	0	36 4 0
Ditto Dairy Appliances	.	.	5	5	0	5 5 0
Ditto Milk and Butter Tests	.	.	21	10	0	30 5 0
			62	19	0	73 17 0
Sale Premium	.	.	20	0	0	20 0 0
Special Prizes and grant for demonstrations.	.	.	49	18	4	54 18 4
						131 2 4
CIDER:—						
Entry Fees	.	.	11	17	6	8 17 6
Fines	.	.				1 10 0
						11 17 6
ADMISSIONS TO SHOW-YARD:—						
Admissions at 5s.	.	.	121	9	9	189 0 0
Ditto at 2s. 6d.	.	.	1,450	7	6	1,111 1 0
Ditto at 1s.	.	.	1,789	12	0	1,357 8 0
Children at 1s.	.	.	51	8	0	25 0 0
Ditto at 6d.	.	.	119	6	0	88 12 0
Season Tickets	.	.	141	16	0	157 16 0
						3,673 18 3
Carried forward	.	.	8,773	11	1	2,928 19 0

CASH ACCOUNT—continued.

Cr.

P A Y M E N T S.	1902.			1901.		
	PLYMOUTH.			CROYDON.		
	£	s.	d.	£	s.	d.
Brought forward . . . . .	..	7,115	5 2			
CHEESE AND BUTTER:—						
Judges	11	8	0	12	19	3
Prizes	143	10	0	157	0	0
Steward and Assistants	24	4	2	16	6	6
Shedding	56	7	6	69	15	0
Printing, Stationery, Carriage, &c.	4	8	6	5	8	0
Grass Table for Butter	5	0	0	5	0	0
		244	18 2	266	8	9
WORKING DAIRY:—						
Stewards and Assistants	68	14	2	54	2	6
Judges and Demonstrators	64	0	0	77	16	10
Building	214	4	6	245	7	11
Printing, Stationery, Postage, and Insurance	10	9	0	11	8	9
Utensils, Carriage, &c.	32	1	11	20	2	6
Prizes	80	9	2	81	4	2
Coal, Salt, Ice, &c.	3	14	9	7	9	2
Consulting Chemist for Analyses	12	13	0	12	0	10
Milk and Churners for Churnability Test	6	19	7	6	0	6
Cows for Milking Competitions	1	8	6	..		
		494	14 7	515	13	2
CIDER:—						
Shedding and Fittings	40	0	0	50	9	11
Steward and Assistants	12	7	5	7	17	0
Judge	5	8	0	6	17	9
Prizes	11	3	6	7	1	10
Printing, &c.	6	0	9	6	14	0
Analyses and Carriage	19	10	0	13	16	0
		94	9 8	92	16	6
PUBLIC ANNOUNCEMENTS:—						
Advertising	161	3	7	203	18	11
Billposting	115	2	8	150	9	11
Railway Placards	37	10	0	37	10	0
Printing	66	4	9	52	10	9
Rent of Placard-Frame Stores	4	0	0	4	0	0
		384	1 0	448	9	7
Carried forward . . . . .	..	£ 8,333	8 7			

PLYMOUTH MEETING, 1902. (cxxxvi)

Dr.

CASH ACCOUNT—*continued.*

RECEIPTS.	1902. PLYMOUTH.						1901. CREDIT.		
	£	s.	d.	£	s.	d.	£	s.	d.
Brought forward			8,773	11	1			
SHOW RECEIPTS (UNAPPORTIONABLE):—									
Stand-fittings				297	5	6		284	4
Contract Premiums				519	6	0		514	10
							816	11	6
								799	14
SUBSCRIPTIONS FROM TOWNS:—									
Bristol for 1903 Show			800	0	0		800	0
SCHOOLS:—									
SOMERSET FARRIERY							156	17
SOMERSET CHEESE:—									
Students' Fees				128	5	6		70	12
Cheese and Butter sold				524	14	7		664	1
Ditto (1901 draft)				214	6	6		255	7
Sale of Students' Note-Books				1	19	7		1	2
Sale of appliances				2	11
Grant from County Council				300	0	0		300	0
							1,169	6	2
								1,293	14
Carried forward			11,559	8	9			

CASH ACCOUNT—continued.

CR.

PAYMENTS.	1902. PLYMOUTH.			1901. CROYDON.		
	£	s.	d.	£	s.	d.
Brought forward. . . . .	..		8,333	8	7	
SHOW EXPENSES (UNAPPORTIONABLE):—						
Erecting Offices and other Buildings	614	17	0	954	13	8
Ditto Hoarding	165	2	4	227	6	1
Carriage of Plant	164	0	0	191	9	8
Steward of Works, &c.	7	7	6	12	8	3
Stand Fittings	114	0	0	135	10	0
Extension of Telegraph Wires	7	7	3	11	2	11
Insurance of Plant	4	10	0	4	10	0
Hire of Furniture	28	14	7	30	14	0
Mess Room	5	5	0	5	5	0
Gatekeepers, Yardmen, Messengers, &c.	80	17	9	82	2	6
Stewards of Finance and Treasurer	24	2	5	21	11	3
Finance Office and Treasurer's Clerks	35	1	10	44	8	4
Police	84	15	0	89	7	6
Badges	3	4	0	3	15	9
Catalogues for Press and Officials	5	11	2	8	16	0
Purchase of Plant	7	0	0	20	16	2
Printing and Stationery	42	16	9	54	15	8
Commission on Sale of Season Tickets and Sundries	16	15	6	10	4	11
Fruit Drying Demonstrations . . . . .	..			24	15	9
			1,411	8	1	1,933
						13
						5
SCHOOLS:—						
SOMERSET FARRIERY . . . . .	..			120	18	10
SOMERSET CHEESE:—						
Salaries and Expenses	143	18	0	130	7	0
Steward's Time and Expenses	72	5	3	62	16	4
Balliff's Wages	54	6	6	39	6	0
Office Staff and Travelling	59	3	8	45	0	6
Milk	577	1	6	779	11	0
Rennet, Bandages, Coal, Salt, &c.	15	8	0	23	1	7
Carriage of Plant	2	16	3	4	14	6
Printing, Stationery, Advertising, Postage and Telegrams	18	1	8	17	2	0
Students' Board	74	14	2	49	10	0
Repairing and replacing Plant and Fittings	2	2	1	36	6	0
			1,019	17	1	1,187
						14
						11
Carried forward . . . . .	..		£10,764	13	9	

PLYMOUTH MEETING, 1902. (cxxxviii)

DR.

CASH ACCOUNT—continued.

RECEIPTS.		1902. PLYMOUTH.		1901. CROFT
		£ s. d.	£ s. d.	£ s. d.
Brought forward		..	11,559 8 9	
EXPERIMENTS:—				
FIELD		..	..	..
MANURES AND MUTTON:—	£ s. d.			
Sale of Sheep	281 14 0			242 19 2
Sale of Wool	16 10 6			19 1 2
Returned on Carriage . . . . .	..			0 19 2
Government Grant (1900) . . . . .	..			75 0 0
Ditto (1901) . . . . .	..			25 0 0
		298 8 6		354 0 9
CIDER:—				
Government Grant (1901)	100 0 0			100 0 0
Ditto	100 0 0			
		200 0 0		
DAIRY RESEARCH:—				
Government Grant (1901)	200 0 0			
Grant from Somerset County Council	100 0 0			100 0 0
		300 0 0		
			798 8 6	554 0 9
			12,357 17 3	11,654 13 4
Balance in Bank, Jan. 1 . . . . .		..	..	382 5 10
Balance due to Bank, Dec. 31 . . . . .		..	278 10 11	940 0 0
		£ 12,636 8 2		12,976 19 2

CASH ACCOUNT—*continued.*

CR.

P A Y M E N T S.		1902. PLYMOUTH.		1901. CROYDON.	
		£	s. d.	£	s. d.
Brought forward . . . .		..	10,764 13 9		
EXPERIMENTS:—					
FIELD:—	£ s. d.				
Manures	12 17 6			4 4 6	
Printing and Stationery	15 0 0			22 0 6	
Steward, Office, Travelling, Post- age, &c.	28 12 2			29 0 1	
Consulting Chemist	2 0 0			1 0 0	
Botanical Visitor	19 9 1			18 16 8	
Purchase of Cattle	44 10 0			..	
		121	8 9	75	1 9
MANURES AND MUTTON:—					
Capital Account—					
Fencing and Appliances	3 9 9			4 18 2	
Current Account—					
Rent of Fields, Manures and Car- riage	37 6 9			88 1 5	
Sheep and Expenses of ditto . . .	252 1 6			245 7 3	
Steward and Postage	24 10 9			27 12 2	
Shepherding, &c.	10 10 10			19 14 6	
Office, Printing, &c.	22 0 0			23 10 0	
		349	19 7	400	3 6
CIDER:—					
Expert	80 0 0			80 0 0	
Fittings	16 0 0			16 0 0	
Office and Travelling	9 11 8			9 6 8	
Printing and Postage	20 6 0			17 13 6	
		125	17 8	123	0 2
DAIRY RESEARCH:—					
Expert and Assistant	278 6 8			118 10 10	
Apparatus	14 6 3			5 15 3	
Office and Postage	28 12 8			20 6 8	
Travelling Expenses	13 2 10			..	
		334	8 5	144	12 9
			931 14 5	742	18 2
			11,696 8 2	12,976	19 2
Balance due to Bank, Jan. 1 . . . .		..	940 0 0	..	
		£ 12,636	8 2	12,976	19 2

I hereby certify that I have examined the foregoing accounts for the year ending Dec. 31st, 1902, compared the payments entered with the vouchers, and found them all in order and correct.

ALBERT GOODMAN, F.C.A.,

Jan. 17th, 1903.

Passed by Council,

Auditor.

Jan. 27th, 1903.

THOS. F. PLOWMAN,

Secretary.

PLYMOUTH MEETING, 1902.

PLYMOUTH MEETING, 1902.

ASSETS AND LIABILITIES TO DECEMBER 31st, 1902, WITH COMPARISON FOR 1901.

ASSETS.	1902.		1901.		LIABILITIES.	1902.		1901.	
	£	s. d.	£	s. d.		£	s. d.	£	s. d.
INVESTMENTS	16,987	4 7	16,987	4 7	DEFERRED PRIZES	8	0 0	4	0 0
Par Value. Actual Cost.									
New Zealand Stock	1,568	1 6	1,500	0 0	BRISTOL MEETING	800	0 0	800	0 0
Consols.	3,001	4 0	5,208	18 6					
India Stock	5,408	6 4	5,277	5 1					
Canada Stock	1,790	13 4	2,000	0 0					
Queensland Stock	2,751	9 0	3,000	0 0					
N. S. Wales Stock	1,753	8 10	2,000	0 0	JOURNAL, cost of, estimated at	450	0 0	450	0 0
16,272	3 0	16,987	4 7						
PLANT (WORKS)			470	6 6	OUTSTANDING ACCOUNTS:—	58	7 11	6	18 0
Do. (DAIRY)			14	18 3					
SUBSCRIPTION ARREARS					Show	11	18 7		
					Schools	19	18 0		
					Experiments	26	13 4		
GOODS IN HAND (CHEESE)			149	0 0					
CHEESE-MAKING APPARATUS			16	0 0	DUE TO BANK, Dec. 31	278	10 11	940	0 0
					BALANCE	1,584	18 10	2,200	18 0
								16,144	0 0
								15,685	4 10
								17,738	18 10
								17,806	2 10

Bath and West and Southern Counties Society,

FOR THE
Encouragement of Agriculture, Arts, Manufactures, and Commerce.

List of Members.

CORRECTED TO JANUARY 27TH, 1903, INCLUSIVE.

PATRON.

HIS MOST GRACIOUS MAJESTY THE KING.

PRESIDENT

FOR 1902-1903.

HIS GRACE THE DUKE OF BEAUFORT.

TRUSTEES.

RIGHT HON. SIR R. H. PAGET, BART.

RIGHT HON. THE LORD CLINTON.

THE MOST HON. THE MARQUESS OF BATH.

Names thus () distinguished are Governors.*

Names thus (†) distinguished are Life Members.

* * * *Members are particularly requested to make the Secretary acquainted with any errors in the names or residences.*

Name.	Residence.	Sub- scriptions.
		£ s. d.
†His Most Gracious Majesty the King.	Windsor Castle . . . . .	. .
†H.R.H The Prince of Wales, K.G.	Sandringham . . . . .	. .
†Ackers, B. St. John . . .	Huntley Manor, Huntley, near Gloucester . . . . .	. .
Ackland, J.	Cutton Farm, Poltimore, Exeter.	1 0 0
Acland, Alfred Dyke . . .	3, Cadogan Square, London, S.W.	1 0 0
†Acland, Rt. Hon. A. H. Dyke	28, Cheyne Walk, London, S.W.	. .
*Acland, Sir C. T. D., Bart..	Killerton, Exeter.	5 0 0
Acland, J.	Bossington, Allerford, Taunton .	1 0 0
Adams, E.	Horner Farm, West Luccombe, Minehead	0 10 0
Adams, George	Wadley House, Faringdon, Berks.	1 0 0

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VOL. XIII.—F. S.

Name.	Residence.	Sub- scriptions.
		£ s. d.
Adams, S. W., jun.	7, Boringdon Villas, Plympton St.	
*Addington, Lord	Mary Addington House, Winslow, Bucks.	1 1 0 2 2 0
*Addington, Hon. G.	Upottery Manor, Honiton	2 0 0
Aiken, J. C.	The Glen, Stoke Bishop, Bristol.	1 0 0
†Aitken, G. H.	Longleat Estate Office, War- minster	
Alexander, D. T.	Cardiff	1 1 0
Alexander, H. G.	Dinas Powis, Cardiff	1 1 0
†Allen, Col. R. E.	10, Hanover Square, London, W.	
†Allen, James D.	Springfield House, Shepton Mallet	
*Allen, J.	Park Place, Cardiff	2 0 0
Allen, W. T.	West Bradley, Glastonbury . . .	1 0 0
*†Amherst, Earl	Montreal, Sevenoaks	
Andrew, J. M.	Ridgeway Lodge, Plympton, Devon	1 0 0
Andrews, S. Fox	Union Street, Bath	1 0 0
Anglo-Bavarian Brewery Co.	Shepton Mallet	1 0 0
Anglo-Continental Guano Works	15, Leadenhall Street, London, E.C.	1 0 0
Anglo-Swiss Condensed Milk Co.	Chippenham	1 0 0
Archer, C.	Trelaske, near Launceston . . .	1 0 0
†Arkwright, J. H.	Hampton Court, Leominster . .	
Armitage, C. W.	The Woodlands, Northaw, Potters Bar	1 0 0
Armitage, S. H.	Upper Newton, Kinnersley, Hereford	1 0 0
Ashburton, Lord	The Grange, Alresford, Hants . .	1 0 0
†Ashcombe, Lord	Denbies, Dorking	
Ashcroft, W.	13, The Waldrons, Croydon . . .	1 0 0
Ashford, E. C., M.D.	The Moorlands, Bath	1 0 0
Aubrey, T., F.R.C.V.S.	19, Paragon, Bath	1 0 0
†Avebury, Lord	High Elms, Hayes, Kent	
†Aveling, Thomas L.	Rochester	
Avon Manure Co.	St. Philip's Marsh, Bristol . . .	1 0 0
Awdry, P. D.	Chippenham	1 0 0
Ayshford-Wise, Major Lovat.	Watts House, Bishop's Lydeard .	1 1 0
Baber, S.	Elborough Farm, Locking, Weston-super-Mare	1 0 0
Badcock, H. Jeffries.	Taunton	1 0 0
Badcock, W. L.	Pitminster Lodge, Taunton . . .	1 0 0
Bailey, J.	Nynehead, Wellington, Somerset	1 0 0
Bailward, T. H. M.	Horsington, Wincanton	1 1 0
Baker, F.	Mahor Farm, Frindsbury, Ro- chester	1 0 0

Name.	Residence.	Sub- scriptions.
		£ s. d.
Baker, G. E. Lloyd	Hardwicke Court, nr. Gloucester	1 0 0
† Baker, L. J.	Ottershaw Park, Chertsey, Surrey	. . .
† Baker, Robert W. G.	Heavitree, Exeter	. . .
Baker, William	Eastbury, Epsom Road, Guildford	1 0 0
* Balston, W. E.	Barvin, Potters Bar, Herts. . . .	2 0 0
Bamford, H., and Sons.	Uttoxeter	1 0 0
Bamlett, A. C.	Thirsk, Yorkshire	1 0 0
Banning, Major A. C. Greaves	Eastbrook, Taunton	1 1 0
Barford and Perkins	Peterborough	1 0 0
Barham, G. T.	Sudbury Park, Sudbury, Middle- sex	1 0 0
Baring, Hon. A. H.	The Grange, Alresford, Hants . .	1 0 0
Barling, J. L., M.R.C.V.S. . . .	King Street, Hereford	1 0 0
Barrett, Major William	Moredon, North Curry, Taunton	1 0 0
Barrett, W.	Moredon, Taunton	1 0 0
Barron, Mrs. W.	Taplow House, Bucks	1 0 0
Barstow, J. J. J.	The Lodge, Weston-super-Mare . .	1 1 0
Barton, D. J.	Huntscoot, Wootton Courtney, Dunster	0 10 0
Bassett, A. F.	Tehidy, Camborne, Cornwall . .	1 0 0
† Bassett, C. H.	Westaway, Barnstaple . . . . .	. . .
* Bastari, B. J. P.	Kitley, Yealmpton, Ivybridge . .	2 0 0
Batchelor, F. J.	Hopwood Stud Farm, Alve- church, Worcester	1 1 0
*† Bath, Marquess of	Longleat, Warminster . . . . .	. . .
Bath and Wells, The Bishop of	The Palace, Wells	1 1 0
Bath Gas Co.	Bath	1 0 0
Bathurst, C., jun.	Lydney Park, Glos.	1 0 0
Batten, Col. Mount. . . . .	. . . . .	1 0 0
Batten-Pooll, R. H.	Road Manor, Bath	1 0 0
† Battishill, W. J.	St. Loyes, Exeter . . . . .	. . .
Baxendale, F. H.	Hailwell Farm, Framfield, Sussex	1 0 0
Beauchamp, E. B.	Trevince, Redruth	1 0 0
* Beaufort, Duke of	Badminton, Chippenham	2 2 0
Beaufoy, M. H., M.P.	Coombe Priory, Shaftesbury . . .	1 0 0
Bellamy, E. J.	Fawley Court, near Ross	1 0 0
Bennett Brothers	Journal Office, Salisbury	1 1 0
Benson, J.	Buxton Dairy, Vale Road, Buxton	1 0 0
Bentall, Edward H., and Co. . .	Heybridge, Maldon, Essex	1 0 0
* Benyon, J. Herbert	Englefield House, Reading	5 0 0
*† Best, Capt. John C. (R.N.). . .	Plas-yn-Vivod, Llangollen . . . .	. . .
† Best, Col. George	Charlton House, Ludwell, Salis- bury . . . . .	. . .
Best, Captain T. G.	Redrice, Andover	1 0 0
† Best, Capt. W.	Vivod, Llangollen . . . . .	. . .
Bigg, Thomas	Leicester House, Great Dover Street, London, E.C.	0 10 0
Birmingham, C.	Holnicote, near Minehead	0 10 0
Biscoe, H. S. T.	Holton Park, near Oxford	1 0 0
† Blackburn, H. P.	Donhead Hall, Salisbury . . . . .	. . .
Blackstone and Co. (Limited)	Rutland Iron Works, Stamford . .	1 1 0
Blake, H. L. T.	Fairfield, Bridgwater	1 0 0

Name.	Residence.	Subscriptions.
		£ s. d.
Blake, M. Lock	Bridge, S. Petherton	1 0 0
Blyth, Sir J., Bart.	33, Portland Place, London, W. . .	1 0 0
Board, J.	Hill Farm, East Pennard, Shepton Mallet	1 0 0
Boby, Robert.	Bury St. Edmunds, Suffolk	1 0 0
Bolden, Rev. C.	Preston Bissett, Buckingham . . .	1 0 0
Bolitho, T. B., M.P.	Trewidden, Penzance	1 0 0
Bond, E.	Hele, Cullompton	1 0 0
†Bond, N.	Creech Grange, Wareham, Dorset . .	. . .
Boscawen, Rev. A. T.	Ludgvan Rectory, Long Roch, R.S.O., Cornwall	1 0 0
*Boteler, Capt. W. J. Cas- berd	The Elms, Taplow	2 0 0
†Boughton-Knight, A. R. . . .	Downton Castle, Ludlow . . . . .	. . .
Bound, William	Hurstborne Tarrant, Andover. . . .	1 1 0
Bouverie, Hon. D. P.	Coleshill House, Highworth	1 1 0
Bouverie, H. P.	Brymore, Bridgwater	1 0 0
†Bowen-Jones, J.	Leckbury, Shrewsbury . . . . .	. . .
†Bowerman, Alfred	Capton, Williton . . . . .	. . .
Boyle, M.	Timsbury, Bath	1 0 0
Braby, E. E.	Drungewick Manor House, Horsham, Sussex	1 1 0
Bradford, Thos., and Co. . . .	Salford, Manchester	1 0 0
Braikenridgo, W. J.	Newton House, Clevedon, Somerset .	1 1 0
Brand, Admiral	Glynde, Lewes, Sussex	1 0 0
†Brassey, A., M.P.	Heythrop, Chipping Norton, Oxon . .	. . .
*†Brassey, H. L. C.	Preston Hall, Aylesford, Kent . . .	. . .
Brenton, W., and Co.	Polbathic, St. Germans	1 0 0
Bridges, J. H.	Ewell Court, near Epsom	1 1 0
<i>Bristol Times and Mirror</i> , Proprietors of	Bristol	1 0 0
Bristol Wagon Works Com- pany (Limited)	Lawrence Hill, Bristol	1 1 0
Britten, Admiral R. F.	Kenswick, Worcester	1 0 0
†Broadmead, W. B.	Enmore Park, Bridgwater . . . . .	. . .
Brockman, F. D.	Beach Borough, Hythe, Kent. . . .	1 0 0
Broderip, E.	Cossington, Somerset	1 0 0
Brown, J.	Marden Farm, Hertford	1 0 0
Brown, William Jeffery	Middlehill House, Box, Wilts	1 0 0
Browne, P. J.	Zeals House, Bath	1 0 0
Bruford, R.	Nerrols, Taunton	1 0 0
Brune, C. G. Prideaux	Prideaux Castle, Padstow	1 0 0
Brutton, J.	7, Princes Street, Yeovil	1 0 0
†Brymer, William E., M.P. . . .	Ilslington House, Dorchester . . . .	. . .
Buck, A.	Worcester	1 0 0
†Buckingham, Rev. F. F. . . .	The Rectory, Doddiscombsleigh, Exeter . . . . .	. . .
Buckingham, W.	Millbrook Farm, North Molton . . .	1 0 0
Buckley, W. J.	Llanelly	1 0 0
Bucknell, B.	Holcombe Rogus, Wellington, Somerset	1 0 0
Budd, H. C.	Land Surveyor, Shepton Mallet . . .	1 0 0

Subscriptions.

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Name.	Residence.	Sub- scriptions.
		£ s. d.
Budd, J. E.	Tidebrook Manor, Wadhurst, Sussex	1 0 0
†Buller, Admiral Sir A., K.C.B.	Erle Hall, Plympton	1 0 0
Burghclere, Lord	Cattedown, Plymouth	1 0 0
Burnard, R.	St. Nicholas Works, Thetford	1 0 0
Burrell, C., and Sons	Knepp Castle, Sussex	1 0 0
†Burrell, Sir C. R., Bart.	Rock House, Chipping Sodbury, Glos.	1 1 0
Bush, Mrs. L. E.	Clifton Club, Clifton, Bristol	1 0 0
Bush, J. A.	Standish House, Stonehouse, Glos.	1 0 0
Bush, G. de Lisle	Torquay	1 0 0
Buswell, C. and W.	Bath	1 0 0
Butcher, G., and Co.	Leigham, Plympton	1 0 0
Butland, B.	Butterworth, R. W.	1 0 0
Byng, Col., Hon. C.	Eddymead House, Launceston	1 0 0
Byng, Major, Hon. L.	15, Chester Square, London, S.W.	1 0 0
Cadogan, J. H.	20, Green Park, Bath	1 1 0
Cesar, H. and J.	Knutsford, Cheshire	1 1 0
Came, J. and G.	Woodhuish, Brixham	1 0 0
Campion, W. H.	Danney, Hassocks, Sussex	1 0 0
Candy, T. C.	Woolcombe, Cattistock, Dorset	1 0 0
Cannon, H.	Milton Clevedon, Evercreech	1 0 0
Carew, C.	Collipriest, Tiverton	1 0 0
†Carey, Alderman P. W.	Shanbally, Cardiff	1 1 0
Carnarvon, Earl of	Highclere Castle, Newbury	1 0 0
Carr, R.	Estate Office, Tring Park, Herts	1 0 0
†Carter, E.	East Upton, Ryde, Isle of Wight	1 0 0
Carter, J., and Co.	238, High Holborn, London	1 0 0
†Cartwright, F. F.	7, Percival Road, Clifton	1 0 0
Carver, H. R.	West House, Chilton Polden, Bridgwater	1 0 0
Cary, Edmund	Pylle, Shepton Mallet	0 10 0
†Cary, W. H.	Steeple Ashton Manor, Trow- bridge	1 1 0
Cater, R. B.	Bath	1 0 0
Cecil, Lord A.	Orchardmains, Tonbridge	1 0 0
Chadwyck-Healey, C. E. H.	New Place, Porlock, Somerset	1 0 0
†Chapman, C.	Carlecotes Hall, Dunford Bridge, Yorkshire	1 0 0
Chapman, Rev. H.	Donhead St. Andrew, Salisbury	1 0 0
Chapman, W. W.	Fitzalen House, Arundel Street, Strand, London	1 0 0

Name.	Residence.	Subscriptions.
		£ s. d.
Cheetham, F. H.	Tetton House, Kingston, Taunton	1 1 0
Chick, John	Compton Valence, Dorchester . .	1 1 0
Churchward, F.	Clarendon House, Granville Park, Blackheath, S.E.	1 1 0
*Clarendon, Earl of	The Grove, Watford	2 2 0
Clark, James	Street, Glastonbury	1 0 0
†Clark, J. J.	Goldstone Farm, Hove, Sussex (Hon. Local Sec., 1885)	1 0 0
Clark, W. S.	Street, Glastonbury	1 0 0
Clarke, A. J.	100, New Bond Street, London . .	1 1 0
Clarke, H.	Quaish Farm, North Wootton, Shepton Mallet	1 0 0
Clarke, W. Hurle	Manor Cottage, Wanstraw, Somerset	1 1 0
Clayden, H.	Northoe, Park View, Hoddesdon .	1 1 0
*Clayton, Shuttleworth, and Co.	Lincoln	2 2 0
Cleave, W. C.	Sanctuary, Crediton, Devon . . .	1 1 0
Cleaver, Capt. J. H.	Cannon Street Hotel, London, E.C.	1 0 0
Clerk, Lt.-Col. R. M.	Charlton House, Shepton Mallet.	1 0 0
*Clifden, Viscount	Lanhydroc, Bodmin	2 0 0
*Clifford, Lord	Ugbrook, Chundleigh	2 2 0
*Clinton, Lord	Heanton Satchville, Dolton, North Devon	2 2 0
Clout, R.	Brome House, West Malling, Kent	1 0 0
Clutton, Robert Geo.	9, Whitehall Place, London . . .	0 10 0
Clutton, R. W.	Hartswood, Reigate	1 0 0
Coaker, B. W.	Old Newnham, Plympton	1 0 0
Coates, S. B.	Stanton Drew Court, Pensford . .	1 0 0
Cobb, H. M.	Higham, Kent	1 0 0
Cock, H.	Redhill Farm, Wedmore	1 0 0
Coles, C.	Manor House, Winterbourne Stoke, Salisbury	1 0 0
Colfox, W.	Westmead, Bridport	1 0 0
Collins, C.	Longhouse Farm, Oldford, Frome .	1 0 0
Collins, C. R.	Hartwell House, Exeter	1 1 0
Collins, D.	Newton Ferrars, Carrington, Corn- wall	1 0 0
Colman, J.	Gatton Park, Surrey	1 0 0
*Colston, E., M.P.	Roundway Park, Devizes	2 2 0
Colthurst, Symons, and Co. (Limited)	Bridgwater	1 0 0
Colville, H. K.	Bellaport Hall, Market Drayton . .	1 0 0
Coney, Herbert F.	The Poplars, Pucklechurch, Bristol	1 0 0
Cook, R.	Chevithorne Barton, Tiverton . .	1 1 0
Cooke and Birmingham	Tiverton	1 0 0
Cooke, C. W. Radcliffe, M.P.	Helens, Herefordshire, <i>via</i> Dymock, Glos.	1 0 0
†Cookson, H. T.	Sturford Mead, Warminster . . .	1 0 0
Cooling, G., and Sons	Northgate Street, Bath	1 1 0
†Cooper, P. W. D.	99, Pembroke Road, Clifton . . .	1 0 0

Name.	Residence.	Subscriptions.		
		£	s.	d.
†Cooper, R. P.	Shenstones Court, Lichfield . . .	1	0	0
Corbett, J. R.	More Place, Betchworth, Surrey.	1	0	0
Corbett, Thomas	Perseverance Iron Works, Shrewsbury	1	0	0
Cordrey, W.	36, Southwark Street, London . .	1	0	0
*Cork and Orrery, The Earl of	Marston, near Frome	2	2	0
†Corner, H. W.	Manor House Inglescombe, Bath . .	1	0	0
†Cornwallis, F. S. W.	Linton Park, Maidstone	1	0	0
Cory, C. J.	Llantarnam Abbey, Mon.	2	0	0
*Cory, H. B.	Druidstone, Castleton, Cardiff . .	1	0	0
†Cotterell, Sir John	Garnons, Hereford	1	0	0
Cotton, Col., the Hon. R. S. . .	Somerford Hall, Brewwood, Staffs. .	1	0	0
Cottrell, G.	Cottrell & Co., Hungerford	1	0	0
Coultas, J. P.	Perseverance Works, Grantham . .	1	0	0
†Courage, Raymond	Shenfield Place, Brentwood, Essex .	1	0	0
Courtenay, Hon. H. L.	Fox, Fowler's Bank, Exeter	1	0	0
†Coussemaker, Lieut.-Col. G. . .	Westwood, Normandy, Guildford, Surrey	1	0	0
*Coventry, The Earl of	Croome Court, Severn Stoke, Worcestershire	2	0	0
Cox, B.	Pwlpen Farm, Christchurch, Newport, Mon.	0	10	0
Cragg, A. R.	Estate Office, Gatton Park, Surrey	1	0	0
Crawshaw, W. T.	Caversham Park, Reading	1	0	0
Crick, Thomas	Great Ash, Winsford, Dulverton . .	0	10	0
Cridlan, J. J.	14, Bishop's Road, Bayswater, London, W.	1	0	0
Crispin, J., and Sons	Nelson Street, Bristol	1	0	0
Crocker, F. W.	Tedford Farm, Batcombe, Cattistock, Dorset	1	0	0
Crofts, D. J.	Sutton Montis, Sparkford, Bath . .	1	0	0
Crossing, W. J.	Woodford Farm, Plympton	1	0	0
Crowley, J., and Co.	Meadow Hall Iron Works, Sheffield	1	0	0
Crutchley, P. E.	Limminghill Lodge, Ascot	1	0	0
Culverwell, W. J.	Durleigh Farm, Bridgwater	1	0	0
Cuming, A. P.	Moreton Hampstead, Devon	1	0	0
Cundall, H. M., F.S.A.	Richmond, Surrey	1	0	0
Cundall, R. and Sons (Ld.) . . .	Airedale Ironworks, Shipley	1	0	0
Custance, Mrs. M.	Woodlands, Southwater, Horsham .	1	0	0
Dairy Supply Company (Ld.) . . .	Museum St., Bloomsbury, London .	1	0	0
Damerel and Son.	161, Sidwell St., Exeter	1	0	0
Dampney, G. D.	Hinton, Ilchester	1	0	0
Daniel, Rev. H. A.	Manor House, Stockland, Bridgwater	1	0	0

Name.	Residence.	Subscriptions.
		£ s. d.
†Daniel, H. T.	Park House, Over Stowey, Bridgewater	. . .
Daniel, Thos. C.	Stuckeridge, Bampton, North Devon	1 1 0
Darby, A. E. W.	Little Ness, Shrewsbury	1 0 0
Darby, E.	Liscombe, Dulverton	1 0 0
Darby, S. R.	Merafield, Martock, R.S.O.	1 0 0
†Darell, D.	St. Stephens, Plympton	. . .
†Davenport, Rev. George H.	Foxley, Hereford	. . .
†Davey, J. Sydney.	Brockym, Cury - Cross - Lanes, Cornwall	. . .
Davey, Sleep, and Co.	Excelsior Plough Works, Plymouth	1 0 0
Davies, J. N.	Gweleath, Cury, R.S.O., Cornwall	1 0 0
Davies, W. H.	Claston, Dormington, Hereford	1 0 0
Davis, F. L.	7, Bute Crescent, Cardiff	1 1 0
Davis, H. J.	Tivoli, Newport, Mon.	1 0 0
Davis, H. J.	Doultling, near Shepton Mallet	1 0 0
Davis, S. P.	King's Acre Road, Hereford	1 0 0
†Davy, W.	Tracy Park, Bristol	. . .
Daw, G.	Larkbere Farm, Ottery St. Mary, Devon	1 0 0
Daw, J. E.	Exeter	1 0 0
*Daw, R. R. M.	9, Regent's Park, Exeter	1 0 0
Dawson, W. and F.	Market Place, Bath	1 1 0
Day and Sons	Crewe	1 0 0
Day, John.	Huxham, E. Pennard, Shepton Mallet	1 0 0
†Day, Son, and Hewitt	22, Dorset St., Baker St., London	. . .
†Deacon, W. S.	Poynters, Cobham, Surrey	. . .
Dean, S.	Newport, Mon.	1 0 0
De Bertodano, B.	Cowbridge House, Malmesbury	1 0 0
De Blaquiére, Lord	3, The Circus, Bath	1 0 0
De Brunet, Don	Sau Sebastian, Spain.	1 0 0
De Cetto, Col.	Byculla, Highland Road, Norwood, S.E.	1 0 0
De Gex, Rev. A. F.	Mcshaw Rectory, S. Molton	1 0 0
De la Warr, Countess	Buckhurst, Withyham, Sussex	1 1 0
Demuth, R. H.	Court Barton, Creech St. Michael, Taunton	1 0 0
Dening, C., and Co.	Chard, Somerset	1 0 0
†Derby, The Earl of	Knowsley, Prescot	. . .
De Rothschild, Miss A.	Waddesdon, Aylesbury	1 0 0
†Devas, H. G.	Hartfield, Hayes, Kent	. . .
†De Vitre, H. Denis	Charlton House, Wantage	. . .
*Devonshire, Duke of, K.G.	Chatsworth, Derbyshire	5 0 0
Dickinson, R. E., M.P.	Greenway Lane, Bath	1 1 0
Dickinson, W.	Kingweston, Somerton	1 1 0
Dickson's, Limited	Chester	1 1 0
†Digby, Lord	Minterne, Cerne Abbas	. . .
Digby, G. H.	Chalinnerington House, Cattistock, Dorchester	1 0 0

Subscriptions.

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Name.	Residence.	Sub- scriptions.
		£ s. d.
Digby, J. K.	Sherborne Castle, Sherborne . .	1 0 0
Digby, J. K. W., M.P.	Sherborne Castle, Sherborne . .	1 0 0
†Divett, J. R.	Golfers' Club, Whitehall Court, London, S.W. . . . .	. . .
†Dobson, H. V.	Perridge House, Shepton Mallet .	. . .
Dodington, R. M.	Horsington House, Templecombe	1 1 0
Dowling, F. H.	Hedge Farm, Pylle, Shepton Mallet	1 0 0
Dredge, James	Melrose, Glastonbury	1 0 0
†Druce, A. F. Milton	16, Queen Street, Oxford . . . .	. . .
Drummond, H. W.	Syon House, Budleigh	1 0 0
*Ducie, Earl of	Tortworth Court, Falfeld, R.S.O., Glos.	2 0 0
*Duckworth, Rev. W. A.	Orchardleigh Park, Frome	2 0 0
Duckworth-King, Sir D., Bart.	Wear House, near Exeter	1 0 0
Dudding, H.	Riby Grove, Stallingboro', Lin- colnshire	1 0 0
Duder, J.	Taunton	1 0 0
Dugdale, Major A. G.	Stock House, Sturminster Newton	1 0 0
†Dunboyne, Lord	Greendale, Clyst St. Mary, Exeter	. . .
†Dungarvan, Viscount	40, Charles Street, London, W. .	. . .
Dunn, William	Frome	1 1 0
Dunning, E. H.	Stoodleigh Court, Stoodleigh, N. Devon	1 0 0
Dunning, Major R. H.	Winkleigh, North Devon	1 0 0
*Dunraven, Earl of	27, Norfolk Street, Park Lane, London, W.	2 2 0
†Durrant, Edward	Hohenlinden, Tunbridge Wells (Hon. Local Sec. 1881). . . . .	. . .
Dyke, Thomas	Long Ashton, Clifton, near Bristol	1 0 0
*Dyke, Rt. Hon. Sir W. Hart, Bart., M.P.	Lullingstone Castle, Eynsford. .	2 2 0
†Dymond, Edward E.	Oaklands, Aspley Guise R.S.O., Beds. . . . .	. . .
Dymond, Francis W.	21, Southernhay, West, Exeter .	1 0 0
Eagle Range and Foundry Co. (Limited)	Catherine Street, Aston, Birming- ham	1 0 0
Eastment, A. C.	Horsington, Templecombe. . . .	1 0 0
Eastwood, A. E.	Leigh Court, Taunton	1 0 0
Economic Fencing Company (Limited)	Billiter House, Billiter Street, E.C.	1 0 0
Eden, R. H. H.	Heytesbury, Wilts	1 0 0
Edgar, Frank	Polden Hill Dairy, Chilton . Polden, Bridgwater	1 0 0

Name.	Residence.	Subscriptions.		
		£	s.	d.
†Edgcombe, Sir Robert Pearce	Sandy Place, Sandy . . . . .	..	
Edgington, B. (Limited) . . .	2, Duke Street, London Bridge, S.E.	1	0	0
Edmonds, W.	Wiscombe Park, Colyton	1	1	0
†Edmondson, A.	Church Farm, Dry Sandford, Abingdon . . . . .	..	
Edridge, Sir F., Bart.	Addiscombe Court, Croydon . . .	1	1	0
Edwards, C. L. Fry	The Court, Axbridge, Somerset .	1	0	0
Edwards, A. P.	Hutton, Weston-super-Mare . . .	1	1	0
Edwards, Jas.	Belmont, Flax Bourton, near Bristol	1	0	0
Edwards, W. H. G.	Butcombe Court, Wrington . . .	1	0	0
Eldridge, Pope, and Co. . . .	Dorchester	1	0	0
*Elliot, H. E. Tracey	9, St. James Terrace, Plymouth .	2	2	0
Ellis, J.	Maidstone	1	0	0
*Elton, Sir E., Bart.	Clevedon Court, Clevedon	2	2	0
Elworthy, C. M.	Stone Farm, South Molton	0	10	0
Enfield, Viscount	Dancer's Hill, Barnet	1	0	0
Enys, F. G.	Enys, Penryn, Cornwall	1	0	0
Esdale, C. E. T.	Cothelstone House, Taunton . . .	1	0	0
Ettle, J., F.R.H.S.	1, Malvern View, Stanley Grove Road, Weston-super-Mare	1	1	0
Evans, Daniel	Winsford, Dulverton	0	10	0
†Evans, Sir David, K.C.M.G.	Ewell Grove, Ewell, Surrey . . .	..	
Evans, J. Spencer	The Chase, Southwater, Sussex .	1	1	0
†Evan-Thomas, Commander A.	Caerwnon, Builth Wells, R.S.O. .	..		
†Eve, H. T., K.C.	Pullabrook, Bovey Tracy, South Devon . . . . .	..	
Evered, P.	Milton Rocks, Dulverton	1	0	0
Fardoe, M.	Woodram Farm, Pitminster, Taunton	1	0	0
†Farmer, S. W.	Little Bedwin, Wilts . . . . .	..	
Farwell, Capt. W.	The Priory, Burnham, Bucks. . .	1	0	0
†Farwell, F. Geo.	Laura Place, Bath . . . . .	..	
†Farwell, Hon. Mr. Justice .	60, Queen's Gardens, Lancaster Gate, London . . . . .	..	
Fenn, T.	Ludlow Estate Offices, Downton Castle, Bromfield, Salop.	1	0	0
Fenton, A. D.	Maristow, Roborough, S. Devon .	0	10	0
Ferris, G.	Milton Manor, Pewsey, Wilts . .	1	0	0
Fife, Capt. W.	Langton Hall, Northallerton, Yorks.	1	1	0
Finch, G. P.	The Briars, Alphington, Exeter .	1	1	0
Finlay, Col. Alexander	Little Brickhill, Bletchley, Bucks	1	0	0
Firkins, A. R.	Paunton, Bishop's Frome, Wor- cester	1	1	0

Subscriptions.

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Name.	Residence.	Subscriptions.
		£ s. d.
Fish, George J.	Churston Court, near Brixham, Devon	1 0 0
Fisher, E.	Mendip Lodge, Langford, Somers- set	1 0 0
Fisher, Col. H. Oakdene	Ty Mynddi, Radyr., near Cardiff.	1 0 0
*Fitzhardinge, Lord	Cranford House, Hounslow	2 0 0
Fletcher, C. E.	Kenward, Yalding, Maidstone	1 0 0
†Fletcher, Lionel J. W.	West Farleigh, Maidstone	1 0 0
Fletcher, W. J.	The Chantry, Wimborne	1 0 0
Flower, James	Chilmark, Salisbury	1 0 0
Flower, Rev. Canon.	Worth Vicarage, Dover	1 0 0
Flower, W. R.	West Stafford, Dorchester	1 0 0
Follows and Bate (Limited)	Gorton, Manchester	1 0 0
Ford, A.	Wraxall Court, Nailsea, near Bristol	1 0 0
*†Forester, Capt. F. W.	Pilmore Hall, Darlington	1 0 0
Forrest, R.	St. Fagans, Cardiff	2 0 0
*Fortescue, Earl	Castle Hill, South Molton	1 0 0
Foster-Harter, G. L.	Salperton Park, Haselton, Glos., R.S.O.	1 0 0
Foster, W.	Mel Valley, Wake Green Road, Moseley	1 0 0
Fowler and De la Perrelle	Gloucester Square, Southampton	1 0 0
†Fowler, G.	Claremont, Taunton	1 0 0
Fowler, J., and Co. (Limited)	Leeds	1 0 0
Fowler, W. H.	Claremont, Taunton	1 0 0
Fownes, Col.	Manor House, Weston Bamp- fylde, Sparkford, Bath	1 0 0
Fownes, Mrs.	Manor House, Weston Bamp- fylde, Sparkford, Bath	1 0 0
Fox, Mrs. A.	Brislington House, nr. Bristol	1 0 0
Fox, Dr. A. E. W.	16, Gay Street, Bath	1 1 0
Fox Brothers and Co.	Wellington, Somerset	1 0 0
Fox, C. L.	Rumwell Hall, Taunton	1 0 0
†Fox, Robert	Grove Hill, Falmouth	1 1 0
Foxcroft, C. T.	Hinton Charterhouse, Bath	1 1 0
Foxcroft, E. T. D.	Hinton Charterhouse, Bath	1 1 0
Frank, Howard E.	10, Conduit Street, London, W.	1 1 0
†Franklen, Col. C. R.	Clemenstone, Bridgend	1 0 0
Fricker, J. A.	Burton, Mere, Wilts.	1 0 0
Frost, Adam E.	Ottery Villa, Pentonville, New- port, Mon.	1 0 0
Fry, H. A.	19, Monmouth Place, Bath	2 0 0
*Fry, J. F.	Fords Abbey, Chard	1 0 0
†Fryer, William Rolles	Verwood Manor, Wimborne	1 1 0
Fuller, E. R.	Bathford, Bath	1 0 0
†Fuller, G. Pargiter.	Neston Park, Corsham	2 0 0
*Fuller, J. M., M.P.	Neston Park, Corsham	1 0 0
Fuller, S. and A.	Bath	1 0 0
Fursdon, Charles	Fursdon, Tiverton, Devon	1 0 0
Fursdon, E. S.	Bellenden, Exeter	1 1 0

Name.	Residence.	Subscriptions.		
		£	s.	d.
†Galloway, W. G.	Cridland Farm, Spaxton, Bridgewater			
Gardiner, Sons, and Co.	Nelson Street, Bristol	1	1	0
Gardner, C. E. L.	Mansion House, Bristol	1	1	0
Gardner, W. E.	Bedminster, Bristol	1	0	0
Garraway, W. A.	Durdham Down Nurseries, Bristol	1	0	0
*Garraatt, Lt.-Col. T. A. T.	Bishop's Court, Exeter	2	2	0
Garrett, W.	Backwell Hill House, West Town, R.S.O., Somerset	1	0	0
Garth, T. C.	Haines Hill, Twyford	0	10	0
Garton, T. R.	Warrington	1	0	0
Garton, W.	Roselands, Woolston, Southampton	1	1	0
Gear, W. H.	Bridge Street, Bath	1	1	0
Gee, B. G. H.	Lock's Mill House, near Bristol	1	0	0
*†George, William E., J.P.	Downside, Stoke Bishop, Bristol			
Gerrish, J.	Chipping Sodbury	1	0	0
†Gibbons, B. G.	Tunley Farm, Bath			
Gibbons, George	Tunley, near Bath	1	0	0
†Gibbons, H.	Church Farm, Clutton, Bath			
Gibbs, A. H.	Pytte, Clyst St. George, Exeter	1	0	0
*†Gibbs, Antony	Tyntesfield, Bristol			
*Gibbs, H. J.	Milford, Salisbury	2	2	0
†Gibbs, H. M.	Barrow Court, Flax Bourton, R.S.O., Somerset			
Gibbs, H. W.	The Briars, Bath	1	1	0
Gibson, J. T.	Havvet Lodge, Langford, R.S.O., Somerset	1	0	0
Gilbey, Sir W., Bart.	Cambridge House, Regent's Park, London	1	1	0
Gilchrist, D. A., B.Sc.	Durham University College, Newcastle-upon-Tyne	1	0	0
Gill, P. O.	Uplands, Wrington, Somerset	1	0	0
†Gladstone, J.	Bowden Park, Chippenham			
*Glyn, Sir Richard G., Bart.	Gaunt's House, Wimborne	2	2	0
Glynn, W. A.	Seagrove, Sea View, Isle of Wight	1	0	0
Goddard, H.	Bossington, Allerford, Taunton	1	0	0
†Godman, C. B.	Woldringfold, Horsham			
Godman, J.	The Raswell, Hascombe, Godalming	1	0	0
Godsell, G. H.	Mornington House, Credenhill, Hereford	1	0	0
†Goldney, Sir Prior, Bart, C.B.	Derriads, Chippenham			
Gooch, Sir T. V. S., Bart.	Benacre Hall, Wrentham, Suffolk	1	1	0
Goodden, J. R. P.	Compton House, Sherborne	1	0	0
Goodford, A. J.	Chilton Cantelo, Yeovil	1	0	0
Goodman, A.	3, Hammet Street, Taunton	1	0	0
Gore-Langton, W. F.		1	0	0
Goring, C.	Wiston Park, Steyning	1	0	0
†Gorringe, Hugh	Kingston-by-Sea, Brighton			

Name.	Residence.	Subscriptions.		
		£	s.	d.
Goschen, Viscount	Seacox Heath, Hawkhurst.	1	0	0
Gough, F. E.	The Moor, Bodenham, Leominster	1	0	0
Gould, J.	Pilton, Shepton Mallet	1	0	0
Grant, C. E.	Bursar, King's College, Cambridge	1	0	0
Grant, W. J.	Pentonville, Newport, Mon.	1	0	0
*Gray, Mrs.	3, Eastern Terrace, Brighton	2	2	0
Greaves, R. M.	Wern, Portmadoc, North Wales	1	0	0
Green, R.	The Whittern, Kington, Herefordshire	1	0	0
†Greenall, Mrs. C. E.	Willoughby Hall, Grantham . . . . .	.	.	.
†Greenall, Sir G., Bart.	Waiton Hall, Warrington . . . . .	.	.	.
Greenaway, J.	Ebbw Place, Ebbw Bridge, near Newport, Mon.	1	1	0
Greenfield, W. B.	Haynes Park, Bedford	1	1	0
Greenham, W. N.	Overton, West Monkton, Taunton	1	1	0
Green Price, Sir R. D., Bart.	The Grove, Presteign, Radnorshire	1	0	0
Greenslade, W. R. J.	Fairfield, Trull, Taunton	1	0	0
Greenway, W.	Halse, Taunton	1	0	0
Greenwell, W.	Marden Park, Woldringham, Surrey	1	0	0
Griffin, H. R.	1, Finsbury Square, London, E.C.	1	0	0
Griffith, Col. J. G. E.	Fairfield House, Cheltenham	1	0	0
Griffiths, Bros.	West Place Hall, Coity, Bridgend	1	0	0
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Guille, H. G. de C. Stevens	Little Torrington, Devon	1	0	0
Guisse, Sir W. F., Bart.	Elmore Court, Gloucester	1	0	0
Gulley, H. J.	Rodber House, Wincanton	1	0	0
Guyon, Rev. H. C.	The Rectory, Lamyat, Bath	1	0	0
Hall, A. H.	Chilcote Manor House, Wells, Somerset	1	0	0
†Hall, J. F.	Sharcombe, Wells, Somerset . . . . .	.	.	.
Hall, R. Gresley	Hanham Hall, Glos.	1	0	0
Hall, T. Farmer	39, Gloucester Square, Hyde Park, London, W.	1	0	0
Halsey, E. J.	104, Drayton Gardens, London, S.W.	1	0	0
Ham, J., jun.	Broadclyst, Exeter	0	10	0
†Hambro, Everard A.	Hayes Place, Beckenham, Kent . . . . .	.	.	.
Hamilton, Hon. Mrs. A. B.	Burley Lodge, Ringwood, Hants	1	0	0
Hamlyn, F.	Clovelly Court, Bideford	1	0	0
Hancock, C.	The Ashlands, Warmley, nr. Bristol	1	0	0
Hancock, C. L.	Manor House, Cothelstone, Taunton	1	1	0
Hancock, Rev. Prebendary	The Priory, Dunster, Somerset	1	0	0

Name.	Residence.	Sub- scriptions.
		£ s. d.
Hancock, H. C.	Halse, Taunton	1 0 0
Hancock, R. D.	Halse, Taunton	1 0 0
*Handley, Rev. E.	Bath	2 0 0
Hankey, Col. W. A. . . . .	. . . . .	1 1 0
Harbin, Col. H. E.	Newton Summerville, Yeovil	1 0 0
Hatbottle, E.	Topsham	1 0 0
Harden, E.	Bower Manor, Bridgwater	1 0 0
Harding, T. K.	Ashton Gifford House, Codford, Bath	1 0 0
Harding, R.	Fenswood Farm, Long Ashton, Bristol	1 0 0
Hardinge, Viscount	South Park, Penshurst	1 1 0
Harford, W. H.	Old Bank, Bristol	1 0 0
Hargreaves, F.	Merton Grange, Gamlingay, Cambs.	1 0 0
Harris, A.	Brownsell Farm, Stourton Caundle, Stalbridge	1 0 0
Harris, Dr. Rutherford	Llangibby Court, Newport, Mon.	1 0 0
Harrison, G.	Gainford Hall, Darlington	1 0 0
Harrison, Major-Gen.	West Hay, Wrington, R.S.O., Somerset	1 0 0
Harrison, McGregor, and Co.	Leigh, Lancashire	1 0 0
Hatzfeldt, H.S.H. Prince	Draycott, Chippenham	1 0 0
Hawkes, T.	Williton, Taunton	1 0 0
†Haydon, Lieut.-Col. W. H.	Maidford, Malmesbury, Wilts . . . . .	. . .
Hayes, F. J.	West Pennard, Glastonbury	1 0 0
Hayter, Rt. Hon. Sir A., Bart.	Trevina, Tintagel, Cornwall	1 0 0
Hayter-Hames, C. G.	Chagford, Newton Abbott	1 0 0
Heard, H.	Shepton Mallet	1 0 0
*Heathcoat-Amory, Sir J. H., Bart.	Knights Hayes Court, Tiverton, Devon	2 2 0
Heathcoat-Amory, I. M.	Hensleigh, Tiverton, Devon	1 0 0
Heberden, W. B., C.B.	Elmfield, Exeter	1 0 0
Henderson, Sir A., Bart., M.P.	Buscot Park, Faringdon, Berks	1 1 0
†*Henderson, W.	Berkeley House, Frome . . . . .	. . .
Henry, Lt.-Col. F.	Elmstree, Tetbury	1 0 0
Hermann, Voss	Chemical Manure Association, 79, Mark Lane, London, E.C.	1 1 0
Hesse, F. W.	Yeomans, Wrington, East Somers- set	1 0 0
Heytesbury, Lord	Heytesbury, Wilts	1 0 0
Hickley, H. N.	Newton Electrical Works, Taun- ton	1 0 0
Hill, A. E.	Lower Eggleton Court, Ledbury	1 0 0
†Hill, B. H.	Newcombes, Crediton, Devon . . . . .	. . .
†Hill, Col. Sir E., C.B.	Rookwood, Llandaff . . . . .	. . .
Hill, Edmond	Stratton House, Evercreech, Bath	1 0 0
Hill and Boll	Yeovil	1 1 0
Hill, Sidney	Langford House, Langford, R.S.O.	1 1 0
Hillman, J.	3, Gracechurch Street, London, E.C.	1 0 0

Subscriptions.

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Name.	Residence.	Subscriptions.		
		£	s.	d.
Hippisley, E. M.	4, Chamberlain Street, Wells, Somerset	1	1	0
Hippisley, R. J. B.	Ston Easton Park, Bath	1	0	0
Hiscock, A., jun.	Manor Farm, Motcombe, Shaftes- bury, Dorset	1	0	0
Hiscock, E.	Ashley Farm, Marnhull, Dorset	1	0	0
†Hoare, Sir H. H. A., Bart.	Stourhead, Bruton			
Hobbs, J. T.	Maisey Hampton, Fairford	1	0	0
Hobbs, R. W.	Kelmscott, Lechlade	1	1	0
*Hobhouse, Rt. Hon. H., M.P.	Hadspen House, Castle Cary	2	0	0
Hoddinott, S.	Worminster Farm, Shepton Mal- let	1	0	0
*†Hodgson, J. Stewart	Lythe Hill, Haslemere, Surrey			
Hodson, F. W.	Live Stock Commissioner, Parli- ament Buildings, Toronto, Canada	1	0	0
Holland and Coombs	Bristol	1	0	0
Holland, J. R.	Wonham, Bampton, Devon	1	0	0
Holt Needham, O. N.	Castle Cary, Somerset	1	0	0
Hood, Sir A. Acland, Bart., M.P.	St. Audries, Bridgwater	1	1	0
†Hooper, R. N.	Stanshawes Court, Chipping Sod- bury			
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†Horner, J. F. Fortescue	1, Whitehall Place, London, S.W.			
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Horton, Rev. Le G.	Wellow Vicarage, Bath.	1	1	0
Horwood, R. E.	Drayton Beauchamp, Tring, Herts	1	0	0
Hosegood, Obed., jun.	Dillington, Ilminster	0	10	0
Hosken, W. J.	Pulsack, Hayle, Cornwall	1	0	0
Hoskins, R.	Beard Hill, Shepton Mallet	1	0	0
Houlton, W.	Broadfield Farm, Northleach, R.S.O.	1	0	0
How, J. H.	Bideford	1	0	0
Howard, J. and F.	Britannia Works, Bedford.	1	0	0
Hubbard, W. E.	Leonards Lee, Horsham	1	0	0
*Hudson, R. W.	Danesfield, Great Marlow	3	3	0
†Hughes, A. E.	Wintercott, Leominster			
Hull, R.	Sutton Benger, Chippingham	1	0	0
Hume Williams, W. E., K.C.	3, Hare Court, Temple, London, E.C.	1	0	0
Hunt, F. W.	Long Ashton, Bristol	1	0	0
Hunter, J.	Seed Merchant, Chester	1	0	0
†Hurle, J. Cooke	Southfield House, Brislington, Bristol			
Hurman, J.	Lulcote, Llanishen, nr. Cardiff	1	0	0
Hurst and Son	152, Houndsditch, London	1	0	0
Hussey, John Richards	Beechcroft, St. Davids, Exeter	0	10	0
†Hvlton, Lord	Charlton, near Radstock			

Name.	Residence.	Subscriptions.		
		£	s.	d.
Ibbotson, R.	The Hawthorns, Knowle, Warwickshire	1	0	0
*†Ilchester, Earl of	Melbury, Dorchester	1	0	0
Imbert-Terry, H. M.	Strete Raleigh, Whimble	1	0	0
Ingram, Lieut.-Col. R. B.	Steyning, Sussex	1	1	0
Innes, J.	Merton, Surrey	1	1	0
Inskip, Jas.	Clifton Park, Clifton, Bristol	1	1	0
Irby, Hon. C.	Hitcham Grange, Taplow	1	0	0
Irby, Hon. G. N.	Porthamel, Llanfair, P.G., Anglesey	1	0	0
Ireland, A. C.	Brislington Hall, near Bristol	1	1	0
Isaac, G.	Manor Farm, South Barrow, Sparkford, nr. Bath	1	0	0
Jackson, Sir H. M., Bart.	Llantillio Court, Abergavenny	1	0	0
Jakeman, E.	Butleigh, Glastonbury	1	0	0
Jarmain, T. M.	Haseley Iron Works, Tetsworth	1	0	0
Jarman, E. J.	Snowdon Villa, Chard	1	1	0
Jefferson, J.	Peel Hall, Chester	1	0	0
Jenkin, S. W.	Liskeard, Cornwall	0	10	0
Jenkins, Sir J. J.	The Grange, Swansea	1	0	0
Jenkins, W. H. P.	Frenchay Park, Bristol	1	0	0
*Jersey, Earl of	Middleton Park, Bicester, Oxon	2	0	0
Jervoise, F. H. T.	Herriad Park, Basingstoke	1	1	0
Jeyes' Sanitary Compounds Company	Cannon Street, London, E.C.	1	0	0
John, T. D.	Chaldeans Stud Farm, St. Fagans, Cardiff	1	1	0
Johns, E.	Cowbridge, Glamorgan	1	0	0
Johnstone, R.	River View, Cardiff	1	0	0
Jollands, W. C.	Ramley, Lymington, Hants	1	0	0
†Jonas, F. N.	Crishall Grange, Saffron-Walden . . . . .	..	
†Jonas, George	Old Vicarage, Duxford, Cambs. . . . .	..	
†Jones, Henry Parr	Beaufort House, Winchester . . . . .	..	
Keel, W. W.	Stanton Drew, Somerset	1	0	0
Keene, James B., and Co.	Journal Office, Bath	1	0	0
Keevil, J. V.	Shaw Farm, Melksham	1	0	0
Kell and Co.	Gloucester	1	0	0

Name.	Residence.	Subscriptions.		
		£	s.	d.
Keller, F.	Salisbury Green, Southampton .	1	1	0
Kemble, C. A.	Hallatrow, Bristol	1	0	0
†Kemp, L. J.	Maer, Exmouth			
Kennaway, Rt. Hon. Sir J. H., Bart., M.P.	Escot, Ottery St. Mary.	1	1	0
Kersley, R.	The Priory, Bathwick Hill, Bath	1	0	0
Kerton, C.	Bridge Farm, West Lydford, Somerton	1	1	0
†Kettlewell, W. W.	East Harptree Court, Bristol . .			
*Keyser, C. E.	Aldermaston Court, Reading . .	2	0	0
Keyworth, J. & H., and Co. .	35, Tarleton Street, Liverpool . .	1	0	0
Kidner, John	Nynehead, near Wellington, Som.	1	0	0
Kidner, S.	Bickley Farm, Milverton	1	0	0
Kidner, W.	Fennington, Kingston, Taunton .	1	0	0
Kindersley, E. L.	Clyffe, Dorchester	1	0	0
King, G. F.	Chewton Keynham, Bristol . . .	1	1	0
King, R. Brooks	The Ridge, Kington Langley, Chippenham	1	0	0
King, R. Moss	Ashcott Park, Bridgwater	1	0	0
King and Son, R.	Milsom Street, Bath	1	1	0
King, Sir Wm. D.	Stratford Lodge, Southsea	0	10	0
King, W. E. M.	Donhead Lodge, Salisbury	1	0	0
Kingscote, T.		1	0	0
Kinneir, H.	Redville, Swindon	1	0	0
Knight, R.	Troytes Farm, Tivington, Mine- head	0	10	0
†Knollys, C. R.	The Grange, Alresford, Hants . .			
Knox, E.	Kilmersdon, Bath	1	1	0
†Kruise, W.	Park, Truro			
Laing, J. A.	Montein Road, Forest Hill, S.E..	1	1	0
†Lake, C.	Oakley, Higham, Kent.			
Lamport, Messrs. C.		1	0	0
*Lansdowne, Marquis of . . .	Bowood, Calne	2	0	0
Larkworthy, E. W.	Messrs. J. L. Larkworthy & Co., Worcester	1	0	0
Lascelles, Rev. E.	Newton St. Loe, Bristol	1	0	0
Lascelles, Mrs.	Newton St. Loe, Bristol	1	0	0
†Latham, T.	Dorchester, Oxon			
*Laverton, W. H.	Leighton House, Westbury, Wilts	2	0	0
Lawrence, J.	Stall Pitt's Farm, Shrivenham . .	1	0	0
Lawrence, J. H. H.	1, Lynwid Villas, Bath	1	1	0
Lear, F. G.	Home Farm, Tyntesfield, Bristol .	1	0	0
Lee, Major-Gen. H. H.	The Mount, Dinas Powis, near Cardiff	1	0	0
Leech, T.	Beaufort Arms Hotel, Raglan. . .	0	10	0

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Name.	Residence.	Subscriptions.		
		£	s.	d.
Lees, Sir Elliott, Bart., M.P.	South Lychett Manor, Poole, Dorset	1	1	0
Legard, A. G.	42, Park Place, Cardiff	1	0	0
Leigh, F., F.R.C.V.S.	St. George's Road, Bristol	1	0	0
Leney, H.	Court Lodge, West Farleigh, Kent	1	0	0
*Lenuard, Sir H., Bart.	Wickham Court, West Wickham, Kent	2	0	0
Lethbridge, Charles	Carlton Club, Pall Mall, London	1	0	0
*Lethbridge, W.	Wood, Okchampton	2	0	0
Leverton, J.	Columb John Farm, Stoke Canon, Exeter	1	0	0
Leverton, W.	Woolleigh Barton, Beaford, North Devon	0	10	0
Lewis, D.	Stoke-under-Ham, Somerset	1	0	0
Lewis, Sir W. T.	The Mardy, Aberdare	1	0	0
Lewis, Wm., and Son	Herald Office, Bath	1	0	0
†Ley, John Henry	Trehill, Exeter			
†Leyland, C. J.	Haggerston Castle, Beal, Northumberland			
Liddon, E., M.D.	Silver Street House, Taunton	1	0	0
Lippincott, R. C. C.	Over Court, near Bristol	1	0	0
Lipscomb, G.	Margam Park, Port Talbot	1	0	0
†Lister, J. J.	Warninglil Grange, Haywards Heath			
Lister, R. A., and Co.	Dursley, Gloucestershire	1	1	0
†Llangattock, Baron	The Hendre, Monmouth			
Llewellyn, Col. Evan H., M.P.	Langford Court, Langford, Bristol	1	1	0
*Llewellyn, Sir J. T. D., Bart.	Penllergare, Swansea	2	2	0
Llewellyn, W. J.	Southwood, Tiverton	1	0	0
*Lloyd, Herbert	Plas Cilybebyll, Pontardawe, R.S.O., Glam.	2	2	0
Locke, A. C. E.	The Grange, Honiton	1	0	0
Long, G.	Ogbourne St. Andrew, Marlborough	1	0	0
*†Long, Rt. Hon. Walter H., M.P.	Rood Ashton, Trowbridge			
Long, Col. William	Woodlands, Congresbury, Somerset	1	0	0
Lopes, H. Y. Buller	Maristow, Roborough, Devon	1	0	0
*Lopes, Rt. Hon. Sir M., Bart.	Maristow, Roborough, Devon	2	0	0
Loram Brothers	Cathedral Dairy Co., Exeter	1	1	0
Lovelace, Amos	Winsford, Dulverton	0	10	0
Lovelace, T.	Bosington, Allerford, Taunton	1	0	0
Lowe, S.	Weddell and Co., 16, St. Helen's Place, London, E.C.	1	0	0
Loxton, F. C.	St. James' Dairy, Bath	1	0	0
Lucas, Lt.-Col. H. E. H.	Dunchideock House, near Exeter	1	0	0
Lumley, M.	1, America Square, Minories, London, E.C.	1	0	0
†Lutley, J. H.	Brockhampton, Worcester			
Luttrell, Capt. A. F.	Court House, East Quantoxhead, Bridgwater	1	0	0
Luttrell, G. F.	Dunster Castle, Somerset	1	0	0

Subscriptions.

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Name.	Residence.	Sub- scriptions.
		£ s. d.
*MacAndrew, J. J.	Lukesland, Ivybridge	2 0 0
McCreath, J. and W. D. . . .	West Cornwall Creamery, Lelant, R.S.O.	1 0 0
McGregor, A. G.	Lake Farm, Bishops Cleeve, near Cheltenham	1 0 0
McIntosh, Mrs. C. M.	Havering Park, Havering Atte Bower, Essex	1 1 0
Major, H. J., and C. (Limited)	Bridgwater	1 0 0
Manfield, J.	Hambridge, Curry Rivell, Taun- ton	1 1 0
†Mansell, A. E.	c/o Roberts & Co., Hobart, Tas- mania	1 0 0
Maple, Sir J. B., Bart., M.P.	Childwickbury, St. Albans	1 0 0
Marcus, M.	High Trees, Redhill, Surrey . . .	1 0 0
Marker, Richard.	Combe, near Houniton	1 0 0
*Marlborough, Duke of . . .	Blenheim Palace, Woodstock . . .	2 0 0
Marriner, E. F.	Thorpe Hall, Hasketon, Wood- bridge, Suffolk	1 0 0
Marshall, Sons, and Co. . . .	Britannia Iron Works, Gainsboro' The Manor, Studland, Wareham, Dorset	1 1 0
Martin, Miss C. H.	Broad Clyst, Exeter	1 0 0
Martin, Christopher	Liscard, Cornwall	0 10 0
Martin, G.	Ham Court, Upton-on-Severn . . .	1 1 0
†Martin, G. E.	Thorverton, R.S.O., Devon	1 0 0
*Maskelyne, N. Story, F.R.S.	Basset Down House, Swindon . . .	2 2 0
*Mason, J.	Eynsham Hall, Oxon	2 0 0
Massey, F. I.	54 & 55, Bunhill Row, London, E.C.	1 0 0
Master, Col. T. W. Chester . .	Knowle Park, Almondsbury	1 0 0
Mathews, Ernest	Chequers Mead, Potters Bar	1 0 0
Mathias, W. H., J.P.	Porth, near Pontypridd	1 0 0
Matthews, H.	Down Farm, Winterbourne, Bristol	1 0 0
Maule, M. St. John	Chapel House, Bath	1 0 0
May, A. C.	Avon House, Stoke Bishop, Bristol	1 0 0
Maynard, W. T.	Yeovil	1 0 0
†Mayo, Henry	4, Temple Terrace, Dorchester . . .	..
†Mayo, John	Coker's Frome, Dorchester . . . .	..
McMurtrie, J.	Southill, Radstock, near Bath . . .	1 0 0
*Meade, F.	The Hill, Langport, Somerset . . .	2 0 0
Meade-King, W. O.	Walford House, Taunton	1 0 0
Medd, J. C., M.A.	Stratton, Cirencester	1 0 0
Medland, W. R.	Yard Farm, Silverton, Cullom- ton	0 10 0
Meek, A. Grant	Hillworth House, Devizes	1 1 0
Merry, Richard	Goulds, Broad Clyst, Exeter	0 10 0
Merry, W. F.	Ash Clyst, Broad Clyst, Exeter . . .	1 0 0
Merryweather, J. C.	4, Whitehall Court, London, S.W.	1 0 0
Methuen, Genl. Lord, C.B., C.M.G.	Corsham Court, Wilts	1 0 0
*Michaelis, M.	Tandridge Court, Oxted, Surrey . .	2 2 0

Name.	Residence.	Subscriptions.		
		£	s.	d.
Michie, D.	Tichborne Park Office, Alresford, Hants.	1	0	0
Mildmay, Rev. A. St. J.	Hazlegrove, Sparkford, Bath	1	1	0
Mildmay, Capt. C. B. St. J.	Hallam, Dulverton	1	0	0
Mildmay, H. B.	Flete House, Ivybridge, Devon	1	0	0
†Mildred, G. B.	Leaton Lodge, Shrewsbury			
Miles, A.	Winchcombe Street, Cheltenham	1	0	0
†Miles, Sir Henry, Bart.	Abbots Leigh, Bristol			
Millard, H.	Shrivenham, Berks	1	0	0
Millard, J. F.	Butleigh, Glastonbury	1	0	0
Millbank, Sir Powlett, C. J., Bart.	Norton Manor, Presteign	1	0	0
Miller-Hallett, A.	Goddington, Chelsfield, Kent	1	1	0
Mills, P. L.	Ruddington Hall, Nottingham	1	1	0
Minton, T. S.	Montford, Shropshire, R.S.O.	1	0	0
Mirehouse, H.	St. George's Hill, Easton-in-Gordano	1	0	0
Mitchell, A. C.	Highgrove, Tetbury	1	0	0
†Mitchell, F. J.	Llanfreckfa Grange, Caerleon, Mon.			
Mitchell, J. R. R.	Reynolds, St. Thomas, Exeter	1	0	0
*Montagu of Beaulieu, Lord	Palace House, Beaulieu, Hants	2	0	0
Montefiore, Mrs.	Worth Park, Crawley	1	1	0
Moody, C.	Weston House, Evercreech	1	0	0
†Moore, H. F.	42, Angel Road, Brixton, London, S.W.			
Moore, J.	The Retreat, Dulverton.	1	0	0
*Moore-Stevens, J. C.	Winscott, Gt. Torrington, Devon	3	0	0
Moore-Stevens, R. A.	Cross, Torrington, Devon	1	0	0
*Moreton, Lord	Sarsden House, Chipping Norton	2	2	0
*Morgan, Hon. F. C.	Ruperra Castle, Newport, Mon.	2	0	0
Morgan-Richardson, C.	Noyadd Wilym, Cardigan	1	0	0
*Morley, Earl of	Saltram, Plympton, Devon	2	0	0
*Morrell, G. Herbert, M.P.	Headington Hill Hall, Oxford	2	2	0
Morris, P.	Widemarsh Street, Hereford	1	0	0
Morris and Griffin (Limited)	Maindee, Newport, Mon.	1	1	0
Morris, Son & Peard	Auctioneers, North Curry, Taunton	1	0	0
Morris, W.	4, Norton Road, Hove, Brighton.	1	0	0
Moss, J. S. K.	Charisworth, Blandford	1	0	0
†Mount, W. G.	Wasing Place, Reading			
*Mount-Edgcumbe, Earl of	Mount-Edgcumbe, Devonport	2	2	0
Mountstevens, J.	Railway Hotel, Yatton	1	0	0
†Mucklow, E., J.P.	Whitstone Head, Whitstone, N. Cornwall			
†Mucklow, E., jun.	Woodhill, Bury, Lancashire			
Mullens, W. H.	Westfield Place, Battle, Sussex	2	2	0
Munro, Capt. G.	Elmsleigh, Send, Woking	1	0	0
Muntz, J. O.	Goodameavy, Yelverton	1	0	0
Muntz, Sir P. A., Bart., M.P.	Dunsmore, near Rugby	1	0	0
Murray, Col. Wyndham, M.P.	10, Rutland Gate, London, S.W.	1	0	0
Murray-Anderson, H. Edward	Henlade House, Taunton	1	1	0

Name.	Residence.	Sub- scriptions.
		£ s. d.
Naper, Col. W. D.	84, Cornwall Gardens, London, S.W.	1 0 0
Napier, H. B.	Ashton Court Estate Office, Long Ashton, Bristol	1 1 0
Neagle, D. T.	London, Glos. and N. Hants Dairy Company, Clifton, Bristol . . .	1 0 0
Neal, J. F.	Kingsdon, Taunton	1 0 0
Neeld, Sir A. D., Bart, C.B. .	Grittleton, Chippenham	1 0 0
Nelder, C. W.	Carnarvon Arms, Dulverton, Somerset	0 10 0
†Neville-Grenville, Robert .	Butleigh Court, Glastonbury . .	. .
†Newton, J. G.	Millaton House, Bridestowe, Devon . . . . .	. .
Nichols, G.	49, Broad Street, Bristol	1 0 0
Nix, Mrs. S.	Tilgate, Crawley, Sussex	1 0 0
Nock, B. B.	48, Queen St., Wolverhampton .	1 1 0
Nock, E.	Brockton House, Shifnal, Salop .	1 0 0
Norman, H. T.	Cushuish, Kingston, Taunton. .	1 0 0
*Normanton, Earl of	77, Pall Mall, London, S.W. . .	2 0 0
Norrish, Thomas	Churchill Farm, Loxbeare, Tiverton	0 10 0
Northcote, Right Hon. Lord .	25, St. James's Place, London, S.W.	1 0 0
*Northumberland, Duke of .	Albury Park, Guildford	5 0 0
Olver, R. S.	Par Station, Cornwall	1 1 0
*Onslow, Earl of, G.C.M.G. .	7, Richmond Terrace, Whitehall, London, S.W.	2 0 0
Osborn, C.	Woolston, North Cadbury, Bath .	1 0 0
Osborne, J.	9, Clifton Park, Clifton	1 0 0
Osenton, G.	Westerham, Kent	1 0 0
Ovey, R.	Badgemore House, Henley-on- Thames	1 0 0
Ozanne, H. M.	Lilyvale, Castel, Guernsey. . .	1 0 0
Paget, L. C.	Amerdown, Radstock	1 0 0
*Paget, Rt. Hon. Sir R. H., Bt.	Cranmore Hall, Shepton Mallet .	2 0 0
Pain, Charles	Grosvenor House, Stockbridge, Hants	1 1 0
Palairot, H. H.	The Grange, Kington Langley, Chippenham	1 1 0
Palmer, G. W.	Marlston House, Newbury . . .	1 0 0

Name.	Residence.	Subscriptions.		
		£	s.	d.
†Palmer, R.	Lodge Farm, Nazeing, Waltham Cross, Essex			
Parfitt, T.	Spargrove, Evercecech	1	0	0
Parham, F. J.	Elmsville, Bath	1	0	0
Parker, Admiral	Delamore House, Ivybridge	1	0	0
†Parker, Hon. Cecil	Eccleston Paddocks, Chester			
Parker, H. C. G.	Brockton Grange, Shifnal, Salop.	1	0	0
Parker, Col. R. J. II.	Bywood Cottage, Woolston, Southampton	1	0	0
Parker, T.	High Street, Shepton Mallet	1	0	0
Parkin, Paxton William	3, Major Terrace, Seaton, Devon.	1	0	0
Parry Okeden, Col. U. E. P.	Turnworth, Blandford	1	0	0
†Parsons, H. J. D.	21, Southernhay West, Exeter			
†Parsons, J. D. Toogood, jun.	Ashurst Place, Langton, Tunbridge Wells			
†Parsons, R. M. P.	Misterton, Crewkerne, Somerset.			
Partridge, H.	Castle Hill, Bletchingley, Surrey	1	0	0
Pass, A. C.	The Manor House, Wootton Fitzpaine, Charmouth	1	0	0
Peacock, E.	14, Union Street, Bath	1	0	0
Pearson, E. & W.	Carlton Chambers, 3, Rumford Street, Liverpool	1	0	0
Pearson, J. W.	Shirley, Southampton	1	1	0
Peel, Mrs.	Coombe Lodge, Bruton	1	0	0
Pember, G. H.	Tangier Park, Basingstoke	1	0	0
Pendarves, W. Cole	Pendarves, Camborne, Cornwall	1	1	0
Penny, Thomas	Taunton	1	0	0
Percival, P.	Somerset Court, Brent Knoll, Highbridge	1	1	0
Perkins, Col. E. K.	Shales, Bitterne, Hants.	1	0	0
Perrott, J. G.	Newton Farm, Newton St. Loe, Bath	1	0	0
†Perry-Herrick, Mrs.	Beau Manor Park, Loughborough			
†Peters, Wm. Parsons	Glencairn, Wells Road, Bath			
Petherick, R.	Acland Barton, Landkey, Barnstaple	0	10	0
Pethick, J.	Norley House, Plymouth	1	0	0
Petter, J. B.	Yeovil	1	0	0
†Pettifer, T. Valentine, F.R.C.V.S.L.	The Limes, Tetbury, Gloucester.			
Philip, D. W.	The Ashes, Whitacre, Birmingham	1	0	0
†Phillips, C. D.	The Gaer, Newport, Monmouth			
Philp, Capt.	Pendoggett, Timsbury, near Bath	1	1	0
Phippen, C. C.	Weston Bampffield, Sparkford, Bath	1	0	0
Phipps, C. N. P.	Chalcot, Westbury, Wilts.	1	0	0
Piggott Brothers and Co.	59, Bishopsgate Street Without, London, E.C.	1	0	0
Pillers, W. A.	Managing Director Radnorshire Polo and Riding Pony Co. (Ltd.), Lodge Stud Farm, Keynsham	1	0	0

Name.	Residence.	Sub- scriptions.
		£ s. d.
Pinney, F.	The Grange, Somerton, Somerset.	1 0 0
†Pinney, R. W.	Stanthill, Dursley, Glos. . . .	. . .
Pitman, T.	Merryland, Galhampton	1 0 0
Pitts, A. G.	The Firs, Highbridge	1 0 0
Platt, J. E.	Howbury Hall, near Bedford . .	1 0 0
Pole, A. E.	Grove House, Weston, Bath . .	1 0 0
*Poltimore, Lord	Poltimore Park, Exeter.	3 3 0
Polwhele, Thos. R. . . .	Polwhele, Truro	1 1 0
Ponter, E.	9, 10 and 11, Queen Square, Bath	1 0 0
Poole, Mrs. A. R.	King's Hill, Dursley	1 1 0
Pope, Alfred	Dorchester	1 0 0
Pope, John	Nowers, Wellington, Somerset .	1 0 0
Pople, R.	New London Hotel, Exeter . . .	1 0 0
Porch, J. A.	Edgarley, Glastonbury	1 0 0
*Portal, Melville.	Laverstoke House, Micheldever .	2 0 0
Portal, Sir Wyndham S. .	Malshanger, Basingstoke	1 0 0
†Porter, R.	Denewood, Highgate, London, N.	. . .
†Portman, Hon. C. B. . .	Child Okeford, Blandford, Dorset	. . .
†Portman, Hon. E. W. B.	Hestercombe, Taunton . . . . .	. . .
*Portman, Viscount . . .	Bryanston, Blandford	5 0 0
*Poynder, Sir J. Dickson, Bart., M.P.	Hartham Park, Corsham	2 0 0
Price, Hermann C.	Drayton, near Taunton	1 0 0
*Prior, R. C. A.	Halse House, near Taunton . . .	2 0 0
Proctor, H. and T. . . .	Cathay, Bristol	1 1 0
†Purgold, A. D.	Park View Farm, Combermere, Whitchurch, Salop . . . . .	. . .
Purrott, W.	Cunnynhame Hill, St. Albans . .	1 0 0
Radcliffe, P. C. C.	Derriford, Crown Hill, R.S.O. . .	1 1 0
*Ramsden, J. C.	Willinghurst, Guildford	2 0 0
Rausome, James Edward .	Orwell Works, Ipswich	1 1 0
Rashleigh, Jonathan . . .	Menabilly, Par Station, Cornwall	1 1 0
Rawlence, Ernest A. . . .	Newlands, Salisbury.	1 0 0
Rawlins, Col. H. de C. . .	Manor House, Bishops Hull, Taunton	1 0 0
Read, A. M.	Livingshayes, Silverton	1 0 0
Read, B.	Quedgeley Manor Farm, Gloucester	1 0 0
Rees, W. J.	Laurels, Swansea.	1 1 0

Name.	Residence.	Sub- scriptions.
		£ s. d.
Reeves, Robert and John, and Son	Bratton Iron Works, Westbury, Wilts	1 0 0
Rendell, R. F.	Torbryan Rectory, Newton Abbot	1 0 0
Renton, W.	Clare House, Tiverton, Devon	1 1 0
Rhodes, W. W.	Coachfield, Honiton Clyst, Exeter	1 0 0
Rice, H. E. H.	Dene Court, Dover	1 0 0
Richards, T. B.	East Pennard, Somerset	1 0 0
Richards, W. F.	Beaumont, Broad Clyst, Exeter	1 0 0
Richardson, J. C.	Glanbrydan Park, Manordilo, R.S.O., Carmarthen	1 0 0
Rickeard, Silas	Newlyn East, Gramscund Road, Cornwall	1 0 0
Ridler, James	Blackford, Selworthy, Minehead	1 0 0
Ridler, T. K.	Minehead, Taunton	1 0 0
Risdon, G.	Hooper's Farm, Tivington, Minehead	1 0 0
Roberts, H.	Ivinghoe, Tring	1 0 0
Roberts, J. D. Cramer	Thornton, Fiant, Sussex	1 1 0
Roberts, J., and Son	Bridgwater	1 1 0
Robertson, R. T.	The Church Farm, Babraham, Cambridge	1 0 0
Robins, J.	High Bray, South Molton	0 10 0
Robinson, S.	Lynhales, Kington, Herefordshire	1 0 0
Robinson, John, and Co.	Bristol	1 1 0
Robinson & Auden (Limited)	Wantage, Berks	1 0 0
Roderick, W. Buckley	Llanelly	1 0 0
Roe, W. J.	West Pennard, Glastonbury	1 0 0
Rogers, E. P.	Burncoose, Perranwell, Cornwall	1 0 0
Rolle, Hon. Mark	Stevenstone, Torrington	1 1 0
Rooper, T. G.	12, Cumberland Place, Southampton	1 0 0
Rootes, C.	Distillery, Hereford	1 0 0
Rossiter, James	West Town, R.S.O., near Bristol	1 0 0
Rothschild, Lord	Tring Park, Herts	1 0 0
Rout, F. R.	Banham, Attleborough, Norfolk	1 0 0
Rowliffe, E. L.	Hall Place, Crauleigh, Guildford	1 1 0
Royal Guernsey Agricultural and Horticultural Society	Guernsey	1 0 0
Ruegg, L. H.	Sherborne	0 10 0
Rutherford, J. A.	Highclere Estate Office, Newbury, Berks	1 0 0
†Ryland, Howard P.	Moxhull Park, Erdington

Subscriptions.

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Name.	Residence.	Sub- scriptions.
		£ s. d.
Saillard, P.	Buchan Hill, Crawley, Sussex .	1 0 0
*Saint Germans, Earl of . .	Port Elliot, St. Germans, R.S.O., Cornwall	3 3 0
St. Maur, Lord P.	Barton Hall, Loughborough, Leicester	1 0 0
Salmon, H. C.	North Fields, Bridgwater . . .	1 0 0
Salmon, W.	Yonder Broadpool Farm, Dou- lting, Shepton Mallet	1 0 0
Salter, Benjamin	Newlands, Broad Clyst, Exeter .	1 0 0
Salter, T.	Beare Farm, Broad Clyst, Exeter	1 0 0
Samuelson, Rt. Hon. Sir B., Bart.	Banbury	1 0 0
Samuelson, Ernest	Bodicote Grange, Banbury . .	1 1 0
Sanders, E. A.	Stoke House, Exeter	1 0 0
†Sanders, E. J.	Stoke House, Exeter . . . .	. . .
Sanders, W. D.	Manor Farm, Grenton, Bridg- water	1 0 0
Sanford, Col. E. C. A., C.M.G.	Nynehead, Wellington, Somerset	1 1 0
Sanford, H. S. J. A.	The Court House, Middlehill, Broadway, Worcestershire . .	1 0 0
Sankey, R. I.	6, Park Hill Rise, East Croydon .	1 0 0
Saunders, C. M.	Boracott, Brandiscorner, North Devon	1 0 0
Saunders, G., jun.	Lydeard House, Taunton . . .	1 0 0
*Scobell, Col. Barton L. J. .	Kingwell Hall, High Littleton, near Bristol	2 2 0
Scott-Hall, H.	Dormington Court, Hereford . .	1 0 0
Scott, R. W.	East Lambrook, S. Petherton . .	1 0 0
†Scott, T.	Ditton Court, Maidstone . . .	. . .
*Scrutton, D. R.	Ogwell, Newton Abbott	2 2 0
Search, Miss B.	Begowans, St. Buryan, R.S.O., Cornwall	1 0 0
†Seaton, Lord	Beechwood, Plympton, Devon . .	. . .
Sedgwick, T. E.	101, Gloucester Place, London, W.	1 0 0
Selby, W. J.	Porlock, near Taunton	1 0 0
Senior, H.	Rushton, Blandford, Dorset . .	1 0 0
†Seymour, R. A. H.	46, Earl Street, Maidstone (Hon. Local Sec., 1884) . . . . .	. . .
Shackell, R.	Swainswick, Bath	1 0 0
Shakerley, Col. H. W. . . .	Burgate, Godalming	1 0 0
†Shaw-Stewart, Walter R. .	Berwick House, Hindon, Salis- bury . . . . .	. . .
Shears, W.	Lee Farm, Pyrford, Woking Station	1 0 0
Sheffield, The Bishop of . .	Doncaster	1 0 0
Shelley, Sir John, Bart. . .	Shobrooke Park, Crediton . . .	1 1 0
Sheppy, J.	Redlynch Park, Chewton Keyn- sham, Bristol	1 0 0
†Sherston, Major C. D. . . .	Evercreech, Somerset . . . . .	. . .
†Sherston, T. P. D.	Thornton House, Thornton-le- Moor, Lincoln . . . . .	. . .
Shore, J. H.	Whalley House, Frome	1 0 0

Name.	Residence.	Sub- scriptions.
		£ s. d.
Shum, F., F.S.A.	Norfolk Crescent, Bath.	1 0 0
Sillifant, A. O.	Culmleigh, Stoke Canon, Exeter.	1 0 0
Simpson, F. C.	Maypool, Churston Ferrars, R.S.O., S. Devon	1 0 0
Sinclair, James	9, New Bridge Street, Ludgate Circus, London, E.C.	1 0 0
*†Singer, A. M.	Redworth, near Totnes. . . . .	..
*Singer, W. M. G.	Streatfield, Paignton, Devon	2 0 0
Skinner, A. C.	Pound Farm, Bishop's Lydeard, Taunton	1 0 0
Skrine, Col. H. M.	Warleigh Manor, Bath	1 1 0
*Slater, A.	Gloucester Carriage Works, Glou- cester	2 2 0
Smart, G. E.	Combe Hay Manor, Bath	1 1 0
Smith, A. J.	Highgrove, Totterdown, Bristol	1 0 0
Smith, Hugh C.	Mount Clare, Roehampton	1 0 0
Smith, J.	Monkton, near Hereford	1 0 0
†Smith, J. W.	Thinghill Court, Hereford. . . . .	..
Smith, Hon. Mrs. Murray.	Gumley Hall, Market Har- borough	1 0 0
†Smith Nigel, M.	The Warren, Hayes, Kent . . . . .	..
†Smith, S. Lee	Larkfield, Maidstone . . . . .	..
*Smith, Hon. W. F. D., M.P.	Greenlands, Henley-on-Thames	5 0 0
Smithells, E.	Merlewood, Newport Road, Stafford	1 0 0
*Smyth, Lady	Ashton Court, Bristol . . . . .	..
Smyth-Osbourne, J. S.	Ash, Winkleigh	1 0 0
Snow, A. D.	Neston, Combe Park, Bath	1 1 0
Solley, G. C.	Clarence House, Sandwich	0 10 0
*Somerset, Duke of	Maiden Bradley, Bath	2 0 0
Somerset Trading Co.	Bridgwater	1 1 0
†Somerville, A. F.	Dinder House, Wells, Somerset . . . . .	..
Southwell, F. C.	75, Southwark Street, London, S.E.	1 1 0
†Spackman, Henry	6, Terrace Walk, Bath . . . . .	..
Spark, H. Smith	Pawlett, Bridgwater.	1 0 0
Spear Brothers and Clark, Ltd.	Southgate Street, Bath	1 0 0
†Spearman, Sir J. L. E., Bart.	Carlton Club, Pall Mall, London . . . . .	..
Speed, W. S.	Mill Farm, Priston, Bath	1 0 0
Speke, W., jun.	Jordans, Ilminster	1 1 0
Spencer, F.	Pondsmead, Oakhill, near Bath	1 1 0
Spencer, S.	Holywell Manor, St. Ives, Hunts	1 0 0
Spicer, Capt.	Spye Park, Chippenham	1 0 0
Spicer, C.	Manor Farm, Bishops Caudle, Sherborne	1 0 0
Spire, Joseph	High Street, Glastonbury	1 0 0
Spratts' Patent (Limited).	24 and 25 Fenchurch Street, City, London, E.C.	1 0 0
Staley, A. E.	Keinton, Somerton	1 0 0
Standish, Miss L.	New Park, Brockenhurst, Hants	1 0 0
Stanford, A.	Eatons, Steyning, Sussex	1 0 0
†Stanford, W.	Eatons, Steyning, Sussex . . . . .	..

Name.	Residence.	Subscriptions.		
		£	s.	d.
Stanhope, Hon. and Rev. B. L. S.	Byford Rectory, Hereford . . .	1	0	0
*Stanley, E. J., M.P. . . .	Quantock Lodge, Bridgwater . .	2	0	0
Starkey, Knight & Ford (Limited)	Bridgwater	1	1	0
Starkey, T.	Woodville, Ilfracombe	1	0	0
Steeds, A.	Red House Farm, Stratton-on- the-Fosse, Bath	1	0	0
Stenner & Co.	Tiverton, Devon	1	0	0
Stephens, H. C., M.P. . . .	Avenue House, Finchley, N. . .	1	0	0
Stephens, W.	St. Maurice House, Plympton, Devon	1	0	0
Stevens, R. N.	Woodham Hall, Woking, Surrey	1	0	0
Stevens, W.	Budlake, Broad Clyst, Exeter .	1	0	0
Still, Henry	Addington House, Addington, Croydon	1	0	0
Stokes, C. W. Rees	Town Clerk, Tenby	1	1	0
Stone, John S.	Clarence Place Works, Newport, Mon.	0	10	6
Storarr, J.	Grittleton, Chippenham	1	0	0
Stothert, P. K.	Keynsham Manor, Saltford, Bristol	1	0	0
†Strachey, Sir E., Bart., M.P.	Sutton Court, Pensford, Bristol .			
Strangways, Hon. H. B. T. .	Shapwick, Bridgwater	1	1	0
Stratton, Richard	The Duffryn, Newport, Mon. . .	1	0	0
*Strickland, A. L.	23, Warwick Square, London, S.W.	2	0	0
Stride, T.	Southgate Street, Bath	1	0	0
Strode, G. S. S.	Newnham Park, Plympton . . .	1	0	0
Stroud, J. S. G. W.	Kingshill House, Knowle, Bristol	1	1	0
Stubs, Peter	Blaisdon Hall, Newnham, Glou- cestershire	1	0	0
Stuckey, Vincent	Hill House, Langport	1	0	0
Studdy, T. E.	Estate Office, Basing Park, Alton	1	0	0
Studts, H.	Swansea	1	0	0
Sturge, William	Bristol	1	1	0
*Sutton, M. J.	Henley Park, Oxon	2	0	0
*Sutton and Sons	Seedsmen, Reading	2	2	0
Swanwick, R.	College Farm, Cirencester . . .	1	0	0
Swithinbank, H.	Denham Court, Denham, Bucks.	1	0	0
Symes, J. H.	Coat Farm, Martock	1	0	0
Symons, J., and Co. (Limited)	The Plains, Totnes	1	1	0
Talbot, Miss	Margam Park, Port Talbot . . .	1	0	0
Tamlin, W.	Talbot House, Stanley Road, Teddington, Middlesex	1	0	0
Tangyes (Limited)	Cornwall Works, Birmingham .	1	0	0
Tanner, E. F.	Hawson Court, Buckfastleigh .	1	0	0
Tapp, David James	Knaplock, Winsford, Dulverton .	1	0	0
Tapp, J. A.	Knaplock, Dulverton	1	0	0
Tasker, W., and Sons . . .	Andover	1	0	0

Name.	Residence.	Subscriptions.		
		£	s	d.
Tate, J. A.	Fairfield, Wells, Somerset . . .	1	0	0
Tatem, W. J.	Shandon, Penylan, Cardiff . . .	1	0	0
Taverner, J.	Budlake, Devon	1	0	0
Taverner, J. E.	Upcott Farm, Thorverton, Exeter .	1	0	0
Tayleur, C. W.	Hampton, St. Mary Church, Torquay	1	0	0
†Taylor, George	Cranford, Hounslow, W.	1	0	0
Taylor, H. W.	Showle Court, Ledbury, Hereford .	1	0	0
†Tazewell, W. H.	Manor House, Taunton	2	0	0
*Temple, Earl	Newton St. Loe, Bath	1	0	0
Templeman, G. D.	Hambridge, Curry Rivel, Taunton .	1	0	0
Thomas, I.	Ely Farm, Cardiff	1	0	0
Thomas, J. C.	The Lodge, Colyford, Axminster .	1	0	0
Thomson, Col. White	Broomfield Manor, Exbourne, N. Devon	1	0	0
Thorley, J.	Ringdale House, Faringdon, Berks .	1	0	0
Thorne, H. E.	Curdon, Williton, Somerset . . .	1	0	0
Thorne, J.	Hall, High Bray, South Molton . .	1	0	0
Thorne, J.	West Yard, N. Molton	0	10	0
Thorue, J. G.	Horridge, Romansleigh, S. Molton .	0	10	0
Thornton, R. T.	Middleton Hall, Brentwood	1	0	0
Thresher, E. B.	Corfe Hill, Weymouth	1	0	0
Thring, D. T.	Boughton House, nr. Kettering . .	1	1	0
Thring, J. Huntley	Alford House, Castle Cary. . . .	1	1	0
Throckmorton, Sir N. W., Bart.	Buckland, Faringdon, Berks . . .	1	0	0
Thurlow, G. R.	Stowmarket	1	0	0
*Thynne, Lord A.	48, Berkeley Square, London, W. .	2	0	0
*Thynne, Lord H.	Muntham, Worthing	2	0	0
Tilley, W. T. S.	East Compton, Shepton Mallet . . .	1	0	0
Tipper, B. C., and Son	Balsall Heath, Birmingham	1	0	0
Titt, J. W.	Implement Maker, Warminster . .	1	0	0
Toogood, E. K.	Messrs. Toogood & Sons, Southampton	1	0	0
Torr, E. R. Berry	Instow, N. Devon	1	0	0
Treadwell, John	Upper Winchendon, Aylesbury . . .	1	0	0
*Tredegar, Lord	Tredegar Park, Newport, Mon. . .	2	2	0
Trefusis, Hon. J.	Rockbeare Grange, Exeter	1	0	0
Trelawney, J. S.	Rosecoghill, Penzance	1	0	0
Treleven, J. T.	Hobbacott Farm, Launceston, N. Cornwall	1	0	0
Tremaine, James	Tregonning, St. Columb Minor, Cornwall	1	0	0
Tremaine, W. H.	Trerice, Newlyn East, Cornwall . .	1	0	0
Tremaine, W. H.	Sherborne, Northleach, Cheltenham .	1	0	0
Trevilian, E. B. Cely	Port Town, Taunton	1	0	0
Treweek, W. H.	Ryne Hill, Kingham, Chipping Norton	1	0	0
Troyte, H.	Huntsham Court, Bampton, Devon .	1	0	0
†Troyte-Chafyn-Grove, G.	North Coker House, Yeovil	1	0	0
Trump, W.	Borough Farm, Broad Clyst, Exeter .	1	0	0
Tucker, H.	Sutton Montis, Sparkford, Bath . .	1	0	0

Subscriptions.

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Name.	Residence.	Sub- scriptions.
		£ s. d.
Tucker, H. B.	Bath and Somerset Dairy Com- pany (Limited), Bath	1 0 0
Tucker, W. W.	Huntspill Villa, Huntspill, Bridg- water	1 0 0
†Tudway, C. C.	The Cedars, Wells, Somerset . .	. . .
Turner, A. P.	The Leen, Pembridge, Hereford .	1 0 0
Turner Brothers	Milsom Street, Bath	1 0 0
Twentyman, A. C.	Castlecrott, Wolverhampton . .	1 0 0
Tyndale-Biscoe, A. A. T. . . .	The Old House, Burgh Hill, Hereford	1 0 0
Tyssen, H. S.	Hylesbrook, Langford, Somerset .	1 0 0
Unite, John	291, Edgware Road, London . .	1 0 0
Unwin, L.	Tiverton	1 0 0
Upham, W. A.	Hollam Cottage, Dulverton, Somerset	1 0 0
Valletort, Viscount	Mount Edgcumbe, Devonport . .	1 1 0
Vaughan, Rev. H.	The Rectory, Wraxall, Somerset .	1 0 0
Vaughan, W.	Doublegates Farm, Bushley, Tewkesbury	1 1 0
Vellacott, H. W. Hopper	Stone Farm, Exford, Taunton . .	1 0 0
†Verulam, Earl of	Gorhambury, St. Albans . . . .	. . .
Vezey, H. J.	Long Acre, Bath	1 1 0
Vezey, Jas.	The Chequers, Box, Wilts. . . .	1 0 0
Vincent, Sir E., Bart., M.P. . .	Esher Place, Esher	1 1 0
Vicary, J.	Rock Farm, Brushford, Tiverton .	0 10 0
Vicary, W.	The Knoll, Newton Abbot	0 10 6
Vipan and Headley	Leicester	1 0 0
Vosper, T.	13, Mersey Street, Liverpool . .	1 0 0
Vosper, W. P.	Saltram Farm, Plympton, Devon .	1 0 0
Waide, W., and Sons	Churn Works, Leeds	1 0 0
Wainwright, C. R.	Shepton Mallet	1 0 0
Walker, E. G. F.	White Hall Farm, Chew Stoke, Bristol	0 10 0
Wall, Dr. Bernard	Hazlewood, Coleshill, near Bir- mingham	1 0 0
†Wallace, Col. R. H.	Army and Navy Club, Pall Mall, London . . . . .	. . .

Name.	Residence.	Subscriptions.		
		£	s.	d.
Wallis and Steevens	North Hants Iron Works, Basingstoke	1	0	0
*Walrond, Rt. Hon. Sir W. Hood, Bart., M.P.	Bradfield, Cullompton, Devon.	2	0	0
†Walsingham, Lord	Merton Hall, Thetford, Norfolk . . . . .	..	
Walters, J.	Kingston Farm, Kingswear, South Devon	1	0	0
Ward, J. E.	Chamber's Court, Tewkesbury	1	0	0
Wardlaw, H. and A.	Holway Farm, Sherborne	1	0	0
†Waring, C. E.	Conservative Club, Cardiff . . . . .	..	
Waring, H. F.	46, Earl Street, Maidstone	1	1	0
Warne, C. G.	Weston-super-Mare	1	1	0
†Warner, T. C., M.P.	Woodford, Essex . . . . .	..	
†Warre, Frederick	44, Great Ormond Street, Bloomsbury, London . . . . .	..	
Warre, Rev. E., D.D.	Eton College, Windsor	1	0	0
*Warwick, Earl of	Warwick Castle, Warwick	2	2	0
Waterloo Cake Mills Co. (Limited)	Wilmington, Hull	1	1	0
Waterman, J. C.	Baltonsborough, Glastonbury	1	0	0
Watts, B. H.	Town Clerk, Bath	1	0	0
Watts, J. & Co.	Backwell, near Bristol	1	0	0
*Way, Gen. N. S.	Manor House, Henbury, Bristol	2	0	0
Weaver, W. T.	Dunkerton, Bath	1	0	0
Webb, E., and Sons	Wordesley, Stourbridge	1	0	0
Webb, Jonas	Melton Ross, Barnethy Junction, Lincoln	1	0	0
Welch-Thornton, H.	Beaurepaire, Basingstoke	1	1	0
Were, J. Kennet	Sidmouth	1	1	0
Weston, H.	The Bounds, Much Marcle, <i>via</i> Dymock, Herefordshire	1	0	0
Wheeler, J.	Shakspeare Farm, Studley	1	0	0
†White, A. R.	Charnage, Mere, Wilts . . . . .	..	
White, F.	Torweston, Williton	1	0	0
White, H.	Midge Hall Farm, Wootton Bassett	1	0	0
White, H. G.	Whitley, near Melksham	1	0	0
White, J.	Zeals Park, Wilts	1	0	0
*†Whitehead, C., F.L.S.	Barming House, Maidstone . . . . .	..	
Whiteway, H. & Co.	Whimble, Devon	1	1	0
Whitney, T. W.	Frithfield, Shepton Mallet	1	0	0
Whitting, C. E.	Sandcroft, Uphill, Weston-super-Mare	1	1	0
Whitting, E. M.	Totterdown, Uphill, Weston-super-Mare	1	1	0
Wicksted, C.	Shakenhurst, Cleobury Mortimer	1	0	0
Wigan, J. A.	Oakwood, Maidstone	1	1	0
Wight, E.	Tedstone Court, near Worcester	1	0	0
Wilder, R. J., and H.	Wallingford	1	0	0
Wilkinson, C.	The Batch, Flax Bourton, Bristol	1	0	0
Wilkinson Brothers & Co.	Union Street, Bath	1	1	0
Willcox, W. H., & Co.	36, Southwark Street, London	1	1	0
Willcox, W. T.	Hampton Hall, Bath	1	1	0

Name.	Residence.	Sub- scriptions.
		£ s. d.
† Willett, P. A.	Brighton . . . . .	. . .
Williams, A. G.	St. George's Brewery, Portsea, Hants	1 0 0
Williams, C.	Glenthorne, Holmer, Hereford	1 0 0
Williams, E.	Lanusk, Usk	1 0 0
* Williams, Edward Wilmot	Herrington, Dorchester	2 2 0
Williams, J.	Ormond House, Weston, Bath	1 1 0
Williams, J. C., M.P.	Werrington Park, Launceston	1 0 0
Williams, M. H.	Pencalerick, Truro	1 0 0
† Williams, M. Scott	Woolland House, Blandford . . . . .	. . .
† Williams, Col. Robert, M.P.	Brideshead, Dorchester . . . . .	. . .
Williams, R.	Vesta Cake Company, 14 to 22, Blackstock Street, Liverpool	1 0 0
* Williams, Sir W. R., Bart.	Heanton, Barnstaple	2 2 0
Willis, J. Deane	Bapton Manor, Codford, Wilts	1 1 0
Wills, Sir William Henry, Bart., M.P.	Blagdon, R.S.O., Somerset	1 0 0
Wills, W.	Caseley, Lustleigh, S. Devon	1 0 0
Willyams Ed. W. Bridges	Nanskeval, St. Columb, Cornwall	1 0 0
Wilmot, S. M.	Albert Road, St. Philips, Bristol	1 0 0
† Wilson, J. Wilson	Broadway, R.S.O., Worcestershire . . . . .	. . .
* Winchester, Marquis of	Amport St. Mary's, Andover	2 2 0
* Windsor, Lord	Hewell Grange, Bromsgrove	4 0 0
Wingfield, A. H.	Amphill House, Amphill	1 0 0
Winter, G.	Chelzoy, Bridgwater	0 10 0
Winterton, Earl	Shillinglee Park, Petworth	1 0 0
Wippell, R.	Thorverton, Devon	1 0 0
Wiseman, H.	Adelphi Hotel, Bristol	1 0 0
Wish, Thomas	Broad Clyst, Exeter	1 0 0
Wodehouse, Rt. Hon. E. R., M.P.	56, Chester Square, London	1 0 0
† Wolcombe, Rev. J. B.	Stowford Rectory, Lewdown, Devon . . . . .	. . .
Wood, W. A., M. & R. Machine Co.	36, Worship Street, London, E.C.	1 1 0
Wood, W., jun.	Hassocks, Sussex	1 0 0
Woodhams, J.	Havelock Road, Hastings	1 0 0
Woodhouse, Major	Heatherton, Taunton	1 0 0
† Woodiwiss, Capt. E. S.	Upminster, Essex . . . . .	. . .
† Woodiwiss, G.	Bath	1 0 0
Woods, Col. Thomas	Llandaff Place, Llandaff	1 0 0
Workman, H. W.	Slimbridge, Gloucester	1 0 0
Wright, Brothers	Park Street, Hobart, Tasmania	1 0 0
Wright, F.	112, High Street, Cheltenham	1 0 0
Wright, Col. J. R.	Gowerton, Swansea	1 0 0
Wrightson, Prof. J.	College of Agriculture, Downton, Salisbury	1 0 0
Wroth, W. S.	Bigbury Court, Kingsbridge	1 0 0
Wyatt, W.	Southgate Street, Bath	1 0 0
Wyatt-Edgell, Col. A.	Cowley Place, Exeter	1 1 0
Wyles, J.	Stonehouse Farm, Frindsbury, Rochester	1 0 0

Name.	Residence.	Sub- scriptions.		
		£	s.	d.
Yeates, C.	Barrow Court Farm, Flax Bourton	1	0	0
Yeo Bros., Paull & Co. (Ltd.)	81, Victoria Street, Bristol . . .	1	0	0
Young, E. A.	Mangotsfield, Bristol	1	0	0
Young, E. Burney	Norfolk House, Laurence Pount- ney Hill, Cannon St., London.	1	0	0
Zacharias, J.	Oxford	1	0	0
(5)				
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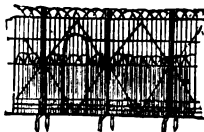
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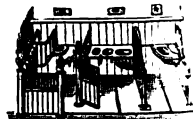
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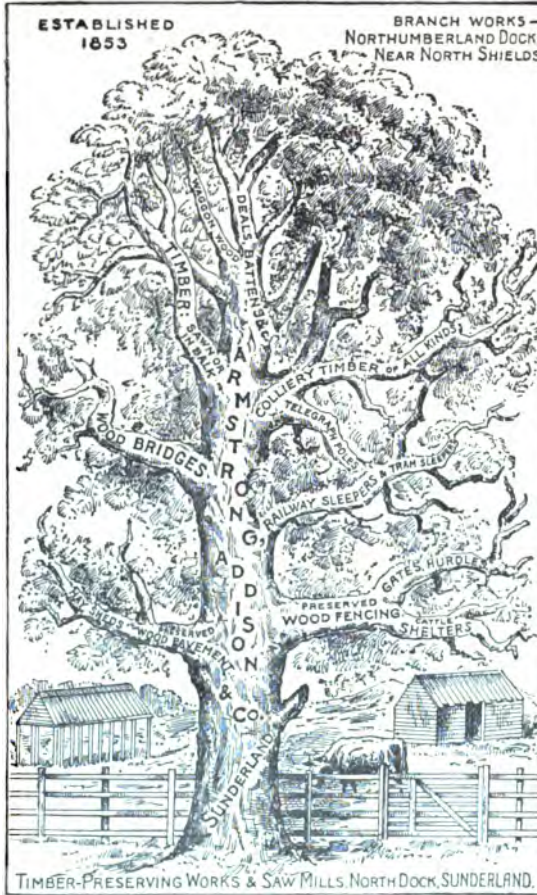
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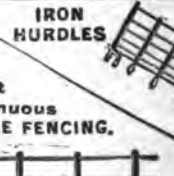
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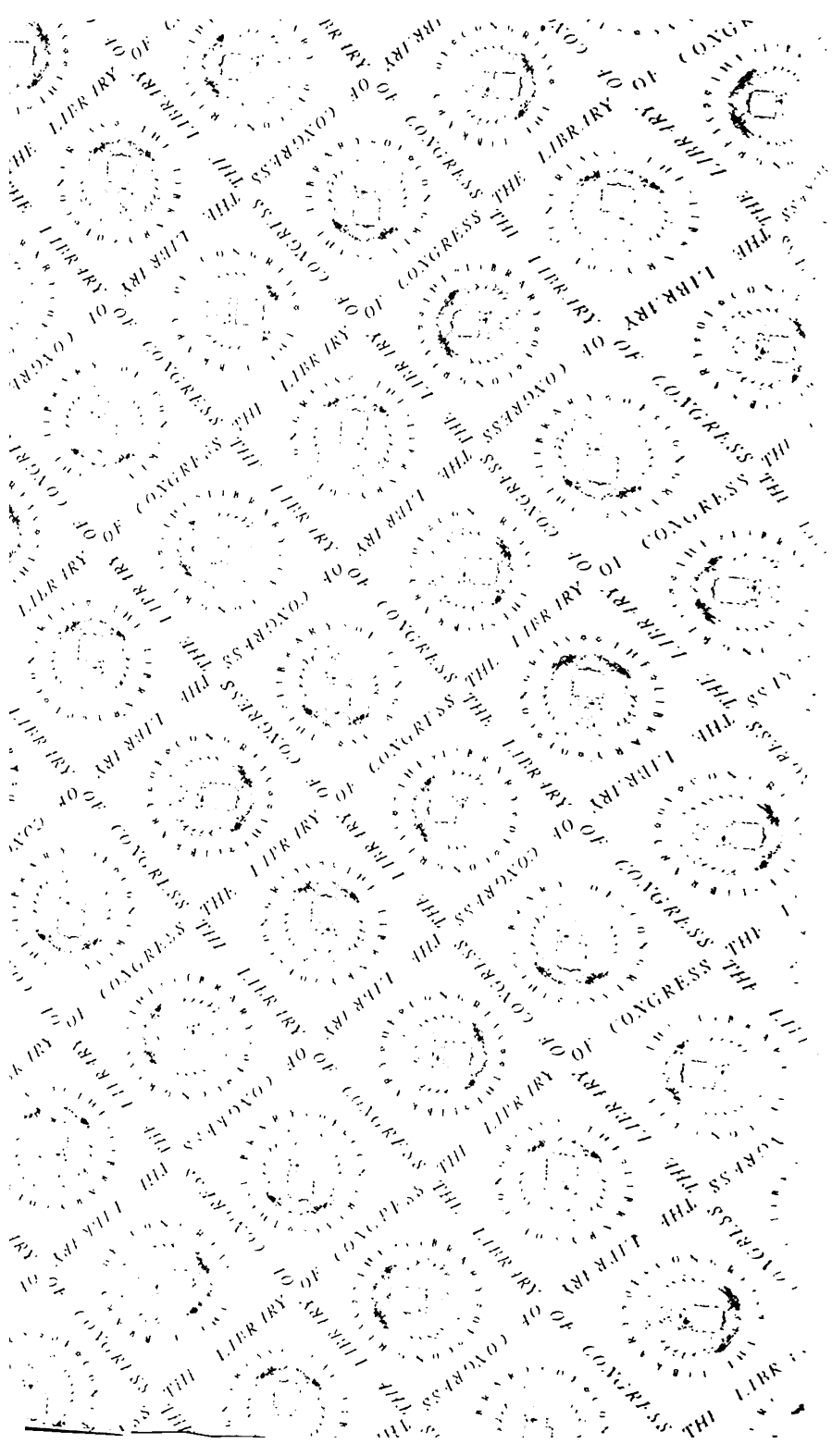
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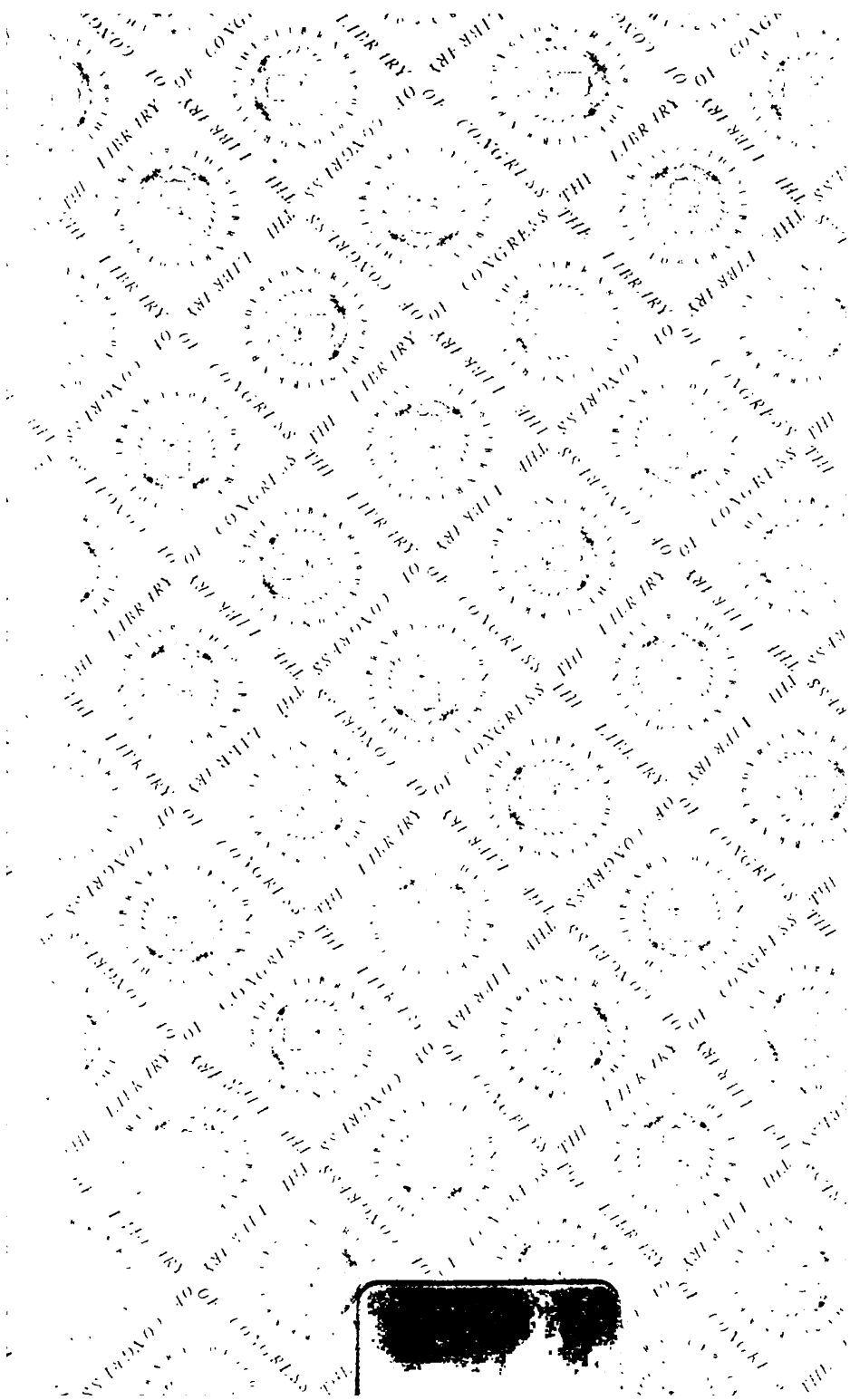
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